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Volume 2 Number 1 Pages 1-98 July 3, 1959

AGRICULTURE

GIDROTEKHNIKA I MELIORATSIYA (USSR) 1958, NO. 11, P. 3-64 (Hydraulic Engineering and Soil Improvement). [1959] 9p. SOV-99-58-11-(1-9)/9.
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Consists of abstracts in English.

GIDROTEKHNIKA I MELIORATSIYA (USSR) 1958, NO. 12, P. 3-61 (Hydraulic Engineering and Soil Improvement). [1959] 6p. SOV-99-58-12-(1-7)/7.
Order from OTS $0.50, $3/6 issues PB 141 092T-8

Consists of abstracts in English.

Malinovskiy, M.
AGRICULTURAL EQUIPMENT FOR HELICOPTERS. 17 Apr 59, 6p. JPRS: L-1629-D.
Order from OTS $0.50 59-11508

Trans. of Grazhdanskaya Aviatsiya (USSR) 1958 [v. 15] no. 7, p. 26-28.

For the coaxial helicopters, Ka-15M and Ka-18, now taking their place among Aeroflot's aircraft for special uses, three types of agricultural equipment have been devised: a duster, sprayer, and an aerosol generator. Their basic units, in particular the drive mechanism, bins, and most of the machinery of the control system, are used in all three types. Replacing one of them with another under field conditions is a matter of no more than three or four hours. Agricultural equipment units of coaxial helicopters are actuated by the engine whose power is transferred by means of an additional transmission and used for turning the pulverizer of the duster and the sprayer pump.

Animal Husbandry

REFERATIVNYY ZHURNAL. BIOLOGIYA (USSR) 1958, NO. 5 (Soviet Abstracts. Biology). 3 Mar 59, 23p. JPRS: 1311-N.
Order from OTS $1.00 59-13260

Contents:
Section R. Diseases of Farm Animals. Abstracts 21575-21632

Complete translations of those entries which were originally published in the Sino-Soviet bloc and in Yugoslavia.

REFERATIVNYY ZHURNAL. BIOLOGIYA (USSR) 1958, NO. 6 (Soviet Abstracts. Biology). 26 Feb 59, 1v. JPRS: 1300-N.
Order from OTS $1.00 59-13245

Contents:
Section Q. Farm Animals. Abstracts 26084-26274

Complete translations of those entries which were originally published in the Sino-Soviet bloc and in Yugoslavia.

REFERATIVNYY ZHURNAL. BIOLOGIYA (USSR)
1958, NO. 7 (Soviet Abstracts. Biology). 24 Feb 59, 1v. JPRS: 1293-N.
Order from OTS $1.00 59-13233

Contents:
Section Q. Farm Animals. Abstracts 30869-31057

Complete translations of those entries which were originally published in the Sino-Soviet bloc and in Yugoslavia.

REFERATIVNYY ZHURNAL. BIOLOGIYA (USSR)
1958, NO. 8 (Soviet Abstracts. Biology). 11 Feb 59, 40p. JPRS: 1252-N.
Order from OTS $1.00 59-13197

Contents:
Section R. Diseases of Farm Animals. Abstracts 35786-35885

Complete translations of those entries which were originally published in the Sino-Soviet bloc and in Yugoslavia.

REFERATIVNYY ZHURNAL. BIOLOGIYA (USSR)
1958, NO. 9 (Soviet Abstracts. Biology).
20 Feb 59, 1v. JPRS: 1282-N.
Order from OTS $1.00 59-13231

Contents:
Section Q. Farm Animals. Abstracts 40381-40580

Complete translations of those entries which were originally published in the Sino-Soviet bloc and in Yugoslavia.

REFERATIVNYY ZHURNAL. BIOLOGIYA (USSR)
1958, NO. 9 (Soviet Abstracts. Biology). 27 Feb 59, 1v. JPRS. 1305-N.
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Contents:
Section R. Diseases of Farm Animals. Abstracts 40592-40670

Complete translations of those entries which were originally published in the Sino-Soviet bloc and in Yugoslavia.

Plant Cultivation

REFERATIVNYY ZHURNAL. BIOLOGIYA (USSR)
1958, NO. 4 (Soviet Abstracts. Biology). 10 Feb 59, 42p. JPRS(NY) rept. -1242
Order from OTS $1.00 59-13188

Contents:
Section J. Soil Science. Abstracts 15231-15334

Complete translations of those entries which were originally published in the Sino-Soviet bloc and in Yugoslavia.

REFERATIVNYY ZHURNAL. BIOLOGIYA (USSR)
1958, NO. 4 (Soviet Abstracts. Biology). 10 Feb 59, 11p. JPRS: 1244-N.
Order from OTS $1.00 59-13190

Contents:
Section L. Meadow Science. Abstracts 15426-15450

Complete translations of those entries which were originally published in the Sino-Soviet bloc and in Yugoslavia.

REFERATIVNYY ZHURNAL. BIOLOGIYA (USSR)
1958, NO. 4 (Soviet Abstracts. Biology). 16 Feb 59, 16p. JPRS: 1261-N.
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Contents:
Section N. Weeds and Their Control
Section O. Plant Diseases
Abstracts 15939-16038

Complete translations of those entries which were originally published in the Sino-Soviet bloc and in Yugoslavia.

REFERATIVNYY ZHURNAL. BIOLOGIYA (USSR)
1958, NO. 4 (Soviet Abstracts. Biology). 16 Feb 59, 178p. JPRS: 1264-N.
Order from OTS $1.00 59-13211

Contents:
Section M. Cultivated Plants. Abstracts 15455-15932

Complete translations of those entries which were originally published in the Sino-Soviet bloc and in Yugoslavia.

Manil, Paul.
RADIOACTIVITY AND RADIOISOTOPES IN THE SERVICE OF BIOLOGICAL AGRICULTURE (Radioactivité et Radioisotopes au Service de la Biologie Agricole) tr. by Herbert W. Ockerman. 15 Dec 58 [10]p.
Order from SLA mi$1.80, ph$1.80 59-10266

Trans. of Nature, Paris (France) 1956. v. 84 [no. 3250] p. 54-[55].

Four research projects concerning the application of radioactivity in biological agriculture, reported at the last International Conference in Geneva, are summarized. Work at the University of Wisconsin on oaks showed that radioactive isotopes are useful in the study of natural grafts of roots, nutritive elements, and the parasitic microorganisms attaching to these trees. A report by Y. Demarly on experiments in France stated that marked phosphorous has proved valuable in making quick pollination studies, where previously observations were long and difficult. Studies in Hawaii showed that radioactive isotopes are valuable in the study of mineral nutrition in plants, and the use of marked 2-4-D facilitated the study of plant reactions to herbicides. Rutgers University reported on the use of Cobalt 60 in studying the structural state of the soil. The study was simplified by inserting Cobalt 60 into the soil and using a Geiger counter.

Tisnes, P. J., Penven, R. and Guilleau, L.
SYSTEMATIC STUDY OF THE BIOCHEMICAL TRANSFORMATIONS OCCURRING IN TOBACCO DURING ARTIFICIAL AND NATURAL FERMENTATION. [1958] [14]p. 1 ref.
Order from SLA mi$2.40, ph$3.30 59-10211

Trans. of Inst[itute] Exp[erimental du] Tab[ac]. Ann[ales] (France) 1956, v. 2, no. 3, p. 149-164.

The variations of pH, acidity, alkalinity of the ash, insoluble nitrogen, calcium, ammonia, and total alkaloids in tobacco during natural and artificial fermentation were determined. The determinations were made by glass electrode/calomel reference electrode system. The electrodes were immersed in an aqueous suspension of milled tobacco previously subjected to mechanical agitation. The values were read directly on a Heito apparatus. During natural fermentation the pH varies little or rises, acidity and alkalinity of ash falls, NH_3 content rises, insoluble N increases slowly, and the total alkaloids falls. In artificial fermentation, a sharp drop in pH and a very considerable rise of acidity occur. Other phenomena are similar to those of natural fermentation. It was found that pH has an important effect on the taste qualities of tobacco.

ASTRONOMY

Astrophysics

Ivanov-Kholodnyy, G. S.
ROCKET INVESTIGATIONS OF SOLAR SHORT WAVE RADIATION. Selected Translations from Soviet Bloc International Geophysical Year Literature. 13 Apr 59, 24p. 79 refs. JPRS: 647-D.
Order from OTS $0.50 59-11502

Trans. of Akademiya Nauk SSSR. Izvestiya. Seriya Geofizicheskaya. 1959, no. 1, p. 108-112.

Topics discussed include (1) the solar constant and the distribution of energy in the 2000- to 70,000-Å spectral region, (2) the spectral region 2000 to 3000 Å and MgII emission lines, (3) photographic measurement in the spectral region 1000 to 2000 Å, (4) the distribution of energy in the spectral region $\lambda < 1500$ Å, (5) the energy of solar X-radiation, (6) short-wave emission from flares in the chromosphere, (7) the contour of the L α line and the distribution of L α intensity over the disc of the sun, and (8) the observation of ultraviolet rays of nonsolar orgin.

Krat, V. A.
PHOTOGRAPHIC METHOD USED IN SOLAR SPECTROGRAPHY, tr. by Carlo A. Bauman. [1958] [9]p. 4 refs. T-2845.
Order from LC or SLA mi$1.80, ph$1.80 59-10238

Trans. of Zhurnal Nauchnoy i Prikladnoy Fotografii i Kinematografii (USSR) 1958, v. 3, no. 1, p. 68-72.

Rösch, Jean.
NEW DATA ON THE MORPHOLOGY OF THE SOLAR PHOTOSPHERIC GRANULATION, tr. by G. Wlérick. 27 May 55, 2p. [abstract omitted].
Order from SLA mi$1.80, ph$1.80 59-10117

Trans. of [Academie des Sciences, Paris]. Comptes Rendus (France) 1955, v. 240 [no. 16] p. 1630-[1632].

Shternfel'd, A.
THE ROAD TO THE MOON (Put' k Lune) tr. by H. H. [1958] [16]p. H-2120.
Order from OTS $0.50 59-11254

Trans. of Vokrug Sveta (USSR) 1958, no. 7, p. 1-8.

Man's conquest of the moon is depicted, and an imaginary lunar excursion is described. The historical background of modern scientific discoveries and some facts about the moon are given. Conditions the first spacemen are likely to meet are discussed, such as the effect of magnetic attraction of the earth and moon, rarified atmospheres, and temperature differences. Intrajectories and problems of planning a flight path are explained. Ways in which man will study the other side of the moon are suggested, such as the building of an artificial satellite to rotate around the moon.

Means for maintaining the satellite aloft are explained, and its function is described. Earth to moon orbital ships are expected to serve as a transit communication system between the earth and the moon. Space travelers would land at these orbital stations before continuing into outer space. The possibility of an express flight to the moon, and special problems of building a station on the moon are also considered.

Waldmeier, M.
A NEW ACTIVITY ZONE OF THE SOLAR CORONA. [1958] 1p. 2 refs.
Order from SLA mi$1.80, ph$1.80 59-10109

Trans. of Die Naturwissenschaften (Germany) 1941, v. 29, no. 10, p. 150.

The latitude distribution of the 119 intensity maxima (rays) of the line 5303 A observed during the observation period in autumn of 1940 are tabulated. The new activity zone has an extent of only 5° in latitude; its average latitude in autumn 1940 amounted to 63° and since the beginning of 1939 has not noticeably changed. On the other hand, the average latitude of the chief maxima at the beginning of 1939 amounted to 14.8°, in the autumn of 1940 only 12.1°, indicating the wandering of the chief zone with the spot zone. The new activity zone at 63° is manifest neither in photospheric nor in chromospheric phenomena, but belongs to the corona alone; therefore it will not be possible to make any definite statements about the behavior of the 63° zone during the 11-year cycle until our observations extend over a whole cycle.

BEHAVIORAL SCIENCES

PROFESSIONAL'NO-TEKHNICHESKOYE OBRAZOVANIYE (USSR) 1958, NO. 12, P. 1-29. (Vocational and Technical Education). [1959] [17]p. SOV-27-58-12-(1-23)/23.
Order from OTS $0.50, $6.00/year PB 141 022T-8

Consists of abstracts in English.

Dehn, Georg and Seidlmeyer, Hans
NEW DESIGNS OF LIGHT-WEIGHT OPERATOR'S SETS (Neue Leichte Sprechgarnituren). [1959] [15]p. 3 refs. (Foreign text included).
Order from SLA mi$2.40, ph$3.30 59-10963

Trans. of Siemens Zeitschrift (West Germany) 1957, [v. 31] no. 8, p. 400-404.

Descriptions are presented of telephone-switchboard-operator sets Fg abfg 43a and Fg abfg 42a which weigh 110 grams and 55 grams respectively, without cord and plug.

BIBLIOGRAPHY

The following items are available from SLA:
BIBLIOGRAPHY OF TRANSLATIONS OF RUSSIAN SCIENTIFIC AND TECHNICAL LITERATURE (Library of Congress).
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SUPPLEMENT TO THE SLA LIST OF TRANSLATIONS FOR SEPTEMBER, 1954, $1.00

TRANSLATION MONTHLY.
1955-1958, Vols. 1-4, $5.00/volume

Library of Congress, Washington, D. C.
EAST EUROPEAN ACCESSIONS INDEX. May 59, 275p.
Order from GPO $10.00/year

Designed to serve the English-speaking user, this index lists post World War II publications received by the Library of Congress and over 100 major American research libraries from Albania, Bulgaria, Czechoslovakia, Estonia, Hungary, Latvia, Lithuania, Poland, Rumania, and Yugoslavia in all fields of knowledge. Arrangement in the first part is by country and within each country by 17 subject classes. In addition to the entry in the original language, a translation of the title or a descriptive annotation in English is given for each monograph and periodical, with the tables of contents translated into English for selected periodicals. The second part, comprising approximately two-thirds of the Index, consists of a subject index to all articles appearing in periodicals for which the tables of contents are translated and to all monographs listed.

NEW BOOKS (BRIEF REPORTS ON PUBLICATIONS OF THE ACADEMY OF SCIENCES USSR). 30 Mar 59, 8p. 35 refs. JPRS: L-728-N.
Order from OTS $0.50 59-13375

Trans. of Akademiya Nauk SSSR. Vestnik, 1958, [v. 28] no. 8, p. 155-158.

BIOLOGICAL SCIENCES

Bender, F. and Seifert, H. H.
THE DIAGNOSTIC USE OF AN ELECTRIC PHOTOCELL PLACED IN THE TIP OF THE CARDIAC CATHETER (Zur Diagnostischen Anwendung Eines Photozellenkatheters) tr. by E. W. O. Keck. Jan 59, [5]p. [9 photos. 1 table omitted]
Order from SLA mi$1.80, ph$1.80 59-10651

Trans. of Zeitschrift für Kreislaufforschung (West Germany) 1958, v. 47, no. 5/6, p. 260-267.

A Cournand catheter equipped with an electric photocell constructed for use in intracardiac and intravasal catheterization is described. The device affords a continuous recording of alternations of blood color, which depend only on oxygen content of the blood when the Hb content is constant. Blood can be withdrawn at any time for oxymetric curve calibration via a lumen close to the photocell. The same canal permits continuous recording of pressure. An illustrative case of a patient examined for suspected heart block is reported.

Anatomy and Physiology

MINUTES OF THE MEETING OF THE MOSCOW SOCIETY OF THERAPEUTISTS. 23 Mar 59, 3p. 1 ref. JPRS: L-707-N.
Order from OTS $0.50 59-13333

Trans. of Terapevticheskiy Arkhiv (USSR) 1958, v. 30, no. 4, p. 94-95.

The reported discussion was chiefly concerned with geriatrics, with especial reference to the climacteric.

Aschoff, Jürgen and Rütger, Wever.
MEASUREMENT OF BLOOD FLOW ON THE HUMAN EXTREMITY (Durchblutungsmessung an der Menschlichen Extremitat) tr. by K. J. Bollinger. Aug 58 [5]p. (3 figs. omitted) 11 refs.
Order from SLA mi$1.80, ph$1.80 59-10226

Trans. of Deutsche Gesellschaft für Kreislaufforschung. Verhandlungen (East Germany) 1957, v. 23, p. 375-380.

The value of using the coefficient of heat transmission between the interior and the surface of the body in blood flow was studied. The density of the heat flow from the skin on 1 hand was measured with a new gradient-calorimeter. The measured difference between the oral temperature and the skin on the other hand, and the density of heat flow, gave two values that expressed the quotient which is the coefficient of heat transmission. The coefficient of heat transmission between internal and superficial body temperatures was directly proportional to blood flow. The calorimeter-pad provided all three thermal measurement factors simultaneously.

Bancaud, J., Hecaen, H. and Lairy, G. C.
ALTERATIONS OF THE REACTIVITY OF THE ELECTROENCEPHALOGRAM "(EEG)". DISTURBANCES OF SYMBOLIC FUNCTIONS AND MENTAL CONFUSION IN LOCALISED HEMISPHERICAL LESIONS. [1958] [18]p. 15 refs. A. C. S. I. L. Trans. no. 1028.
Order from SLA mi$2.40, ph$3.30 59-10212

Trans. of Electroencephalography and Clinical Neurophysiology (Canada) 1955, v. 7, p. 179-192.

A study is made of the alterations of the reactivity of the EEG as correlated to psycho-pathological disturbances occurring in localised hemispherical lesions. The unilateral abolition of the alpha blocking response is seen in disturbances of symbolic functions (aphasic, agnostic and aparaxic syndromes) without concomitant mental confusion. The alpha blocking response is bilaterially abolished in cases with mental confusion. The interpretation of the various modalities of reactions of the EEG in correlation with the degree of disturbance of consciousness is discussed.

Belik, Ya. V.
BIOCHEMISTRY OF BLOOD COAGULATION: EXCERPTS. 2 Feb 59, 41p. (refs. omitted) JPRS L-507-N.
Order from OTS $1.25 59-13089

Trans. of mono. Biokhimiya Svertyvaniya Krovi, Kiev, 1957, p. 5-18, 74-83 and 105-122.

The history of blood coagulation studies is summarized, with emphasis on the theories of A. A. Schmidt. The role of vitamins is outlined. The work of Russian investigators on neural mechanisms in coagulation is described. The properties of heparin, antithrombin, antithromboplastin, and of various coumarin derivatives as anticoagulants are enumerated.

Benetato, Gr., Balyu, I. and Kukuyanu, M.
THE ROLE OF THE SUPRARENALS IN MAINTENANCE OF BLOOD PROTEIN COMPOSITION AND IN ANTIBODY FORMATION. 23 Mar 59, 13p. 14 refs. JPRS: 1375-N.
Order from OTS $0.50 59-13319

Trans. of Patologicheskaya Fiziologiya i Eksperimental'naya Terapiya (USSR) 1958, v. 2, no. 5, p. 11-16.

The effect of vaccination on the protein fractions of the plasma was studied in normal and adrenalectomized animals in parallel with the formation of antibodies. The investigations were carried out on 56 rats (150 to 200 grams) of both sexes which were kept on a milk diet with black bread; the adrenalectomized rats, in addition, received sodium chloride solution (1:1000). We carried out the immunization of the normal animals with a suspension of a culture of typhi murium heated at a temperature of 60° for an hour; this suspension contained four billion microbes per milliliter, and was injected in three doses of 0.1 ml at intervals of two days. The immunization of normal animals with an emulsion of typhi murium was accompanied by a percentile and absolute decrease in the albumin fractions of the serum and an increase in the gamma-globulins in the blood, which proceeded in parallel with the increase in agglutinin titer. Adrenalectomy produced serious disturbances of the blood proteins and the development of immunobiological processes. Animals which were operated on and vaccinated showed a definite decrease in the concentration of serum albumins and an increase in the alpha$_1$- and alpha$_2$-globulins as well as an absence of hypergammaglobulinemia characteristic

of the immune state. The appearance of antibodies in these animals was delayed, and their titer is lower than in the intact animals. The injection of cortisone into adrenalectomized and vaccinated animals did not restore the capacity of the body to form antibodies and to produce a hypergammaglobulinemia. In adrenalectomized animals, cortisone restored the content of serum albumins, due to an increase in the capacity of the liver to synthesize proteins. The injection of desoycorticosterone into adrenalectomized animals during the period of immunization restored their capacity of synthesizing gamma-globulins and of forming antibodies and even increased this process. The restoration of albumin synthesis occurred to a slight degree.

Ishimova, L. M.
ALLERGIC REACTION OF THE CAROTID SINUS CHEMORECEPTORS ACCORDING TO DATA FROM ELECTROPHYSIOLOGICAL INVESTIGATIONS.
23 Mar 59, 6p. (2 figs. omitted) 5 refs. JPRS: 1378-N.
Order from OTS $0.50 59-13322

Trans. of Patologicheskaya Fiziologiya i Eksperimental'naya Terapiya (USSR) 1958, v. 2, no. 5, p. 25-29.

Electrophysiological investigation of the action of serum and bacterial antigens on the chemoreceptors of the carotid sinus in non-sensitized cats and rabbits has shown that the given agents are very weak stimuli compared with acetylcholine or nicotine. It was not possible to detect the essential differences in the character of the impulses produced by the stimulation of the carotid sinus chemoreceptors by serum or bacterial antigens in animals with unchanged immunological reactivities. The action of serum and bacterial antigens on the chemoreceptors of the carotid sinus in sensitized animals produces a much greater excitation of the sinus receptors and correspondingly more frequent impulses in the sinus nerve. However, it was also impossible to detect any characteristic features of the impulses for each of the antigens tested individually.

Ivanov-Smolenskiy, A. G.
NEW [DATA] IN THE STUDY OF THE NEURAL MECHANISMS OF INTERACTION OF CORTICAL SIGNAL SYSTEMS, tr. by Z. D. Knowles. 12 Jan 59, 50p. 2 refs.
Order from LC or SLA mi$3.30 ph$7.80 59-12006

Trans. of A[kademiya] N[auk] SSSR. Institut Vysshey Nervnoy Deyatel'nosti. Trudy. Ser[iya] Patofiziol[ogicheskaya] 1956, v. 2, p. 315-334.

Investigations carried on at the Institute of Higher Nervous Activity over a period of years are discussed in general terms. Especial attention has been directed to the role of speech reinforcement in acquisition of conditioned responses. Experiments proved that replacement of the conditioning stimulus by its verbal designation results in the same autonomic responses through "dynamic transfer". Reference is made to studies of the so-called typological characteristics of cortical activity, particularly in children.

Krasnogorskiy, N. I.
ABSTRACTION AND GENERALIZATION AS PRINCIPAL PHYSIOLOGICAL FUNCTIONS OF A CHILD'S BRAIN. 19 Mar 59, 13p. (8 figs. omitted) 3 refs. JPRS: 1370-N.
Order from OTS $0.50 59-13310

Trans. of Akademiya Meditsinskikh Nauk SSSR. Vestnik. 1958, v. 13, no. 4, p. 3-12.

Krushinskiy, L. V.
THE BIOLOGICAL SIGNIFICANCE OF EXTRAPOLATIONAL REFLEXES IN ANIMALS. 20 Mar 59, 12p. (13 figs. omitted) 7 refs. JPRS: L-704-N.
Order from OTS $0.50 59-13330

Trans. of Zhurnal Obshchey Biologii (USSR) 1958, v. 19, no. 6, p. 457-466.

Markov, Kh. M.
THE FUNCTIONAL CONDITION OF THE CEREBRAL CORTEX UNDER CONDITIONS OF PROTEIN SENSITIZATION OF THE ORGANISM. 23 Mar 59, 8p. (1 fig. omitted) 9 refs. JPRS: 1377-N.
Order from OTS $0.50 59-13321

Trans. of Patologicheskaya Fiziologiya i Eksperimental'naya Terapiya (USSR) 1958, v. 2, no. 5, p. 21-25.

Tests on 3 dogs indicated that the process of sensitization of the body includes, along with an alteration of the specific immunobiological reactivity, a change in the reactivity of the cerebral cortex to adequate stimuli. Against the background of sensitization, the sensitivity of dogs to functional tests of the strength and mobility of the neural processes is markedly increased, thus leading to the development of severe neurotic states.

Rozhe, A., Voronin, L. G., and Sokolov, Ye. M.
ELECTROENCEPHALOGRAPHIC RESEARCH ON TEMPORARY ASSOCIATION WITH DAMPENING OF THE ORIENTATION REFLEX IN MAN. 19 Jan 59, 18p. (25 figs. omitted) 17 refs. JPRS L-622-N.
Order from OTS $0.50 59-13060

Trans. of Zhurnal Vysshey Nervnoy Deyatel'nosti (USSR) 1958, v. 8, no. 1, p. 3-16.

Savchenko, O. N.
CARBOHYDRATE-PHOSPHATE METABOLISM IN THE BRAIN DURING HYPOTHERMIA AND HYPOXIA. 1 Apr 59, 18p. 35 refs. JPRS: 1412-N.
Order from OTS $0.50 59-13356

Trans. of Voprosy Meditsinskoy Khimii (USSR) 1958, v. 4, no. 2, p. 139-149.

Experiments showed that reduction of the body temperature of anesthetized rabbits to 25° or 20° C does not change the content of ATP, phosphocreatine, inorganic phosphorus, hexose-phosphates, and lactic

acid in the brain tissues. Two-hour hypothermia also does not alter the level of these compounds in the brain. Consequently, hypothermia of animals under deep ether anesthesia does not produce cerebral hypoxia. Exclusion of the heart from the circulatory system in warm-blooded animals for three to six minutes at normal body temperature leads to abrupt shifts in the carbohydrate-phosphorus metabolism of the brain; phosphocreatine is completely degraded, the level of labile phosphorus of ATP declines to one-third normal, and the content of inorganic phosphorus and lactic acid increases three to four times above the normal. Exclusion of the heart from the circulatory system for ten to 15 minutes in warm-blooded animals cooled to 25° or 20° causes shifts in the carbohydrate-phosphorus metabolism of the brain which are comparatively less marked despite the longer period of circulatory arrest: phosphocreatine is completely destroyed and the level of inorganic phosphorus and lactic acid increases to almost the same extent as in non-cooled animals. However, the level of labile phosphorus of ATP falls only about 1 1/2 to 2 times that of the normal. The use of aminazine does not influence carbohydrate-phosphorus metabolism either in normal animals or in those in which the heart is excluded from the circulatory system. Changes of carbohydrate-phosphorus metabolism with exclusion of the heart from the circulation for ten minutes in cooled animals are completely reversible. After five to ten minutes of renewed circulation and respiration, the level of the labile phosphorus of ATP and phosphocreatine and the content of inorganic phosphorus return almost to normal. A complete return to normal in the carbohydrate metabolism is not seen within this period of time, however, since the content of lactic acid and of hexose-phosphates remains considerably above normal.

Shatray, Ye. F., Verkhratskiy, N. S. and others.
THE EFFECT OF A VITAMIN P PREPARATION FROM EGLANTINE HIPS ON THE ENDURANCE OF ANIMALS IN A RARIFIED ATMOSPHERE. 1 Apr 59, 8p. 13 refs. JPRS: 1411-N.
Order from OTS $0.50 59-13355

Trans. of Voprosy Meditisinskoy Khimii (USSR) 1958, v. 4, no. 2, p. 120-124.

The administration of a preparation of eglantine-hip extract with a high content of hydroxybenzenes favors greater survival of white mice and rats in rarefied atmospheric air. Administration of the preparation reduces hemorrhage into the lungs of experimental animals in rarefied air. The preparation shows no influence on tissue respiration. The higher survival rate of animals following administration of the extract under conditions of rarefied air is due to the capillary-strengthening action of vitamin P.

Vinogradova, O. S. and Sokolov, Ye. N.
STUDY OF THE SENSITIVITY OF THE ACOUSTIC ANALYZOR FOR HARD OF HEARING CHILDREN BY METHOD OF REGISTRATION OF VASCULAR REACTIONS. 5 May 59, 9p. (8 figs. omitted) 12 refs. JPRS: L-1650-D.
Order from OTS $0.50 59-11542

Trans. of Problemy Fiziologicheskoy Akustiki (USSR) 1955, v. 3, p. 67-74.

Werle, E. and Amann, R.
THE PHYSIOLOGY OF MAST CELLS AS CARRIER OF HEPARIN AND HISTAMINE: EXCERPTS (Zur Physiologie der Mastzellen als Träger des Heparins und Histamine). Nov 58 [6]p. (refs. omitted).
Order from SLA mi$1.80, ph$1.80 59-10701

Partial trans. of Klinische Wochenschrift (Germany) 1956, v. 34, 15 June, p. 624-630.

Biochemistry

Adaskin, E. M., Ziminova, M. I. and others.
CONTINUOUS HYDROGENATION OF GLUCOSE IN THE PRESENCE OF A GRANULATED NICKEL BASE CATALYST. 23 Oct 58, 12p. 14 refs.
Order from LC or SLA mi$2.40, ph$3.30 59-10158

Trans. of Zhurnal Prikladnoy Khimii (USSR) 1958, v. 31, no. 4, p. 595-601.

A nickel-base catalyst activated by chromium proved more effective during the hydrogenation of glucose than when unactivated and had higher stability. Tests were made on the hydrogenation of aqueous solutions of glucose in an apparatus, feeding the mixture from top to bottom (III) and vice versa (II). Hydrogenation was three times higher in III. The consumption of the catalyst was calculated during a continuous hydrogenation process. During hydrogenation of III it was half the amount in II. The decrease in the hydrogenation velocity at II is explained by the difficulty of transportation of the hydrogen to the surface of the catalyst.

Ascione, A., Lauria, D. and others.
BEHAVIOR OF THE SUCCINO-DEHYDROGENASE ACTIVITY OF THE MYOCARDIUM OF RATS TREATED WITH DCA (Comportamento dell'Attivita Succino-Deidrogenasica del Miocardio di Ratti Trattati con DOCA). [1958] 5p. [7] refs.
Order from SLA mi$1.80, ph$1.80 59-10622

Trans. of Soc[ietà] It[aliana di] Biol[ogia] Sper-[imentale]. Boll[ettino] (Italy) 1958, v. 34 [no. 19] p. 1214-1216.

Rats weighing on the average 250 gm were given 50 mg of DCA dissolved in 2 ml of peanut oil, injected under the skin of the back. Other rats were treated in the same manner with a single dose of 5 mg of the hormone. The animals were killed by decapitation and bleeding 18, 36, 48 and 72 hr after administration of the hormone. The succinodehydrogenase activity was determined by the method of reduction of triphenyltetrazolium on 1 ml of homogenate 5% of the heart in toto, carried out in H_2O at the temperature of melting ice with glass homogenizers of the Potter-Elvehjem type. The same procedure was performed on untreated control rats. After administration of 50 mg DCA, the succinodehydrogenase activity behaved in a manner entirely comparable to that observed in animals shortly after hypophysectomy. Eighteen hr after the administration of the hormone, a close analogy was observed between the behavior of cytochrome C and that of the succinodehydrogenase

activity. In the subsequent phases this latter tends to return more slowly to normal values. No significant change whatsoever was observed in the animals treated with 5 mg of DCA. The results obtained can be interpreted as the consequence of a functional pituitary block on the metabolism of the myocardium. The absence of any influence of the 10 times smaller dose of DCA on the dehydrogenase activity agrees with this hypothesis (which fact would induce us to exclude a direct action of the hormone administered) as well as the agreement of the data reported here with those observed after hypophysectomy.

Bianchini, P. and Fraja, A.
QUANTITATIVE DETERMINATION OF PITUITARY AND CHORIONIC GONADOTROPINS IN HUMAN URINE (La Determinazione Quantitative delle Gonadotropine Ipofisaire e Placentari nell'Urina Umana). Feb 59 [15]p. (14 figs. omitted) 6 refs.
Order from SLA mi$2.40, ph$3.30 59-10708

Trans. of Società Lombarda di Scienze Mediche e Biologiche. Atti (Italy) 1957, v. 12 [no. 3] p. 452-461.

A standard for the normal amounts of pituitary and chorionic gonadotropins in human urine was determined. Rats weighing 25 ± 2gms were used in the study. One group was injected with doses of the pituitary gonadotropin extracted from urine by a new method which is described in detail. Another group was injected with urine from a pregnant woman for study of the chorionic gonadotropin. The injections were given daily for 4 days, and the animal was autopsied on the 5th day. The uterus showed identical changes in both groups. The ovaries increased more in the rats treated with the pituitary gonadotropin obtained from urine of several menopausal women. The hypothesis was drawn that the variations in the uterine and ovarian changes were due to the presence of 2 hormones, although it was not possible to separate the 2 factors by chromatography of the pituitary gonadotropins. Measurement of gonadotropins by chemical methods was unsuccessful.

Brin, G. P. and Krasnovskiy, A. A.
A STUDY OF PHOTOOXIDATION SENSITIZED BY CHLOROPHYLL AND PHEOPHYTIN (Issledovaniye Fotookisleniya, Sensibilizirovannogo Khlorofillom i Feofitinom) tr. by G. A. Somorjai. [1958] [20]p. 31 refs. UCRL Trans. 366.
Order from LC or SLA mi$2.40, ph$3.30 59-10465

Trans. of Biokhimiya (USSR) 1957, v. 22 [no. 5] p. 776-788.

A study was made of the oxidation of ascorbic acid sensitized by chlorophyll and pheophytin. It was shown that, besides ascorbic acid, chlorophyll and pheophytin sensitize oxidation of cysteine, polyphenols, cytochrome c and other compounds. The chlorophyll and pheophytin sensitized oxidation occurs with those hydrogen donors which have the capacity to photoreduce these pigments. This substantiates the mechanism of the reaction which consists of a light stage of photoreduction of the pigment and a dark stage of oxygen interaction with the photoreduced form of the pigment. Along with chlorophyll solutions, great activity is exhibited by colloid solutions obtained by means of detergents among which the most active proved emulphor (the condensation product of oleilic alcohol with ethylene oxide).

Parrot, Jean-Louis, Laborde, Claude, and Mordelet-Dambrine, Madeleine
DIFFERENCES BETWEEN THE INBORN AND ACQUIRED HISTAMINOPEXIC CAPACITY OF BLOOD PLASMA (L'histaminopexie innée ou acquise du Plasma sanguin. Caractères différentiels) tr. by Pierre J. Nadeau. Dec 58, [7]p. (1 illus. omitted) 7 refs.
Order from SLA mi$1.80, ph$1.80 59-10356

Trans. of Journal de Physiologie (France) 1958, v. 50. p. 435-438.

Various studies have showed that differential criteria allow one to know whether the histaminopexic capacity of human plasma is inborn or acquired. In the first instance the individual is not an allergic; in the last instance the patient is an allergic treated with either normal human serum or a mixture of histamine and human gamma-globulins. Heating the serum at 56° for 20 minutes destroys the acquired without altering the inborn histaminopexic capacity. The largest amount of histamine that can be picked up is far greater in the case of the inborn histaminopexic capacity. The presence of a histamine azoprotein complex, even at extremely low concentration, will destroy the acquired histaminopexic capacity in vitro, yet it does not alter the inborn histaminopexic capacity even at maximal concentrations.

Soulier, J. P., Wartelle, O. and Ménaché, D.
DIFFERENTIAL CHARACTERISTICS OF HAGEMAN AND PTA FACTORS. ROLE OF CONTACT IN THE INITIAL PHASE OF COAGULATION (Caractères Différentiels des Facteurs Hageman et P.T.A. Rôle du Contact dans la Phase Initiale de la Coagulation). Sep 58, 10p. (4 figs. omitted).
Order from SLA mi$2.40, ph$3.30 59-10898

Trans. of Revue Française d'Etudes Cliniques et Biologiques (France) 1958, v. 3, no. 3, p. 263-267.

Results of the in vitro investigation of the characteristics of the Hageman factor and the prothromboplastic factor (PTA), carried out on fowl plasma and using the indirect Margolis test, showed that plasma with the Hageman "trait" is not capable of being activated by glass, that plasma deficient in PTA is normally activated in the presence of glass and that the Hageman factor is the contact factor and is activated by glass in the presence of Ca^{++}. Once activated, the Hageman factor is not capable of being inhibited. Thus, indications are that Hageman factor + contact (glass) $\rightarrow$ activated Hageman factor (AHG). AHG + PTA + CA^{++} $\rightarrow$ 3rd PTA or antihemophilic factor C. Activated Hageman factor plays no role in the activation of antihemophilic factor B.

Timakov, V. D. and Skavronskaya, A. G.
THE ROLE OF NUCLEIC ACIDS IN HEREDITY AND VARIABILITY OF MICROORGANISMS. 19 Mar 59, 30p. 129 refs. JPRS: 1371-N.
Order from OTS $1.00 59-13311

Trans. of Akademiya Meditsinskikh Nauk SSSR. Vestnik 1958, v. 13, no. 4, p. 12-27.

This paper is largely derived from American sources. There is no evidence of original research.

Wallenfels, Kurt, Kerp, Lothar, and Sunda, Horst.
ON THE COMBINATION OF NORMAL SERUM AND OF SERUM OF ALLERGIC PATIENTS WITH HISTAMINE [Über die Histaminbindung im Serum von Normalen und Allergikern]. 1 Feb 59, 4p. (2 paragraphs, 1 table, 2 figs. omitted)
Order from SLA mi$1.80, ph$1.80 59-10700

Trans. of Klinische Wochenschrift (Germany) 1958, v. 36, no. 16, p. 772-773.

General Biology

Dugand, Armando.
SOME BIRDS OF THE APAPORIS RIVER (Algunas Aves del Rio Apaporis) tr. by Carl Spencer Yelverton. 2 Dec 58 [18]p. 5 refs.
Order from SLA mi$2.40, ph$3.30 59-10330

Trans. of Lozania (Colombia) 1952, no. 4, p. 1-12.

Kremyanskiy, V. I.
CERTAIN PECULIARITIES OF ORGANISMS AS A "SYSTEM" FROM THE POINT OF VIEW OF PHYSICS, CYBERNETICS AND BIOLOGY. 17 Mar 59, 21p. 2 refs. JPRS: 1356-N.
Order from OTS $0.75 59-13302

Trans. of Voprosy Filosofii (USSR) 1958. no. 8, p. 97-107.

Matsushita, Hiroshi.
RESTORATION FROM INHIBITION OF BACTERIAL CELL DIVISION. [1958] [7]p. 18 refs.
Order from SLA mi$1.80, ph$1.80 AEC-tr-3511

Trans. of Kagaku (Japan) 1955, v. 25, p. 137-138.

Various strains of Escherichia coli were used to investigate the inhibition and restoration of bacterial cell division. Various strains were exposed to UV light, X-ray, and nitrogen mustard, and then treated by heat restoration and photo-restoration. The strains were tested for their synthetic ability for desoxyribonucleic acid (DNA), and conclusions were based on the effects on the colony counts of the organisms. When the concentration of the irradiating agent was low, the synthetic ability for DNA was not affected, but it was completely lost when the survival was about 50%. DNA synthesis suppression was restored by both heat restoration and photo-restoration. The essential components of the cell were destroyed by low dosage of irradiation, but the nucleic acid synthesis power remained. Cells suppressed in their division by irradiation, but still retaining the synthetic ability for DNA, survived under conditions suitable for balance within the cell. One strain of the organism treated with nitrogen mustard showed no photo-restoration.

Microbiology

REFERATIVNYY ZHURNAL. BIOLOGIYA (USSR) 1958, NO. 8 (Soviet Abstracts. Biology). 16 Fev 59, 39p. JPRS(NY)-1263
Order from OTS $1.00 59-13210

Contents:
Section F. Microbiology

Complete translations of those entries which were originally published in the Sino-Soviet bloc and in Yugoslavia.

Alikhanyan, S. I. and Mindlin, S. Z.
USE OF BIOCHEMICAL MUTANTS OF ACTINOMYCES RIMOSUS FOR THE PREPARATION OF HYBRIDS. 14 Nov 58, 7p.
Order from LC or SLA mi$1.80, ph$1.80 59-10143

Trans. of Akademiya Nauk SSSR. Doklady, 1957, v. 114, no. 5 [p. 1113-1115].

Biochemically incomplete mutants of Actinomyces rimosus, obtained by ultraviolet radiation of spores, were cultured in an agar corn medium containing amino acids and vitamins, placed in a synthetic liquid medium and then sown in pairs on an agarized corn or synthetic medium, thus resulting in the formation of cylinders. These cylinders, having the characteristics of the original strain, e.g., growth and terramycin formation, grew in the presence of their specific growth factors or after joint innoculation with corn medium, thus indicating a hybrid effect. This formation is not a true individual growth but is explained either by syncrophism, i.e., mutual supply of missing nutritive substances resulting in more powerful growth, or by heterocariosis i.e., anastomosing of the mycelia.

Mindlin, S. Z. and Alikhanyan, S. A.
BIOCHEMICAL MUTANTS OF ACTINOMYCES RIMOSUS (TERRAMYCIN PRODUCER). 12 Nov 58 [7]p.
Order from LC or SLA mi$1.80, ph$1.80 59-10142

Trans. of Akademiya Nauk SSSR. Doklady, 1956, v. 111, no. 4 [p. 884-886].

Biochemical variants of the UV irradiated spores of the terramycin producer, Actinomyces rimosus, were cultured on a corn-extract medium containing methionine and niacin. Results showed that the amount of methionine and niacin present in the medium is sufficient for the growth of the variants but insufficient for their maximum terramycin production. These results were confirmed by addition of varying amounts of niacin and methionine to variants grown on

a synthetic medium. Addition of niacin and methionine to the original strain caused very little change in the activity and dry wt of the mycelium because Actinomyces rimosus synthesizes these compounds itself and does not require them synthetically for its growth.

Pochinok, V. Ya.
THE ANTIBACTERIAL PROPERTIES OF A EUCALYPTUS DECOCTION. 1 Apr 59, 9p. 9 refs.
JPRS: L-716-N.
Order from OTS $0.50 59-13357

Trans. of Mikrobiologichnyy Zhurnal (USSR) 1958, v. 20, no. 1, p. 34-39.

In studies carried out with the use of the Warburg apparatus on three strains of Staphylococcus aureus and of paratyphoid A bacillus, respectively, eucalyptus decoction suppressed oxygen consumption and the activity of succindehydrogenase in these strains. The degree of suppression depended on the concentration of the decoction: the greater the concentration of the preparation, the greater the degree of suppression both of oxygen consumption and of the activity of succindehydrogenase.

Rolland, G., Pagani, H. and Contri, M.
USE OF ANTIBIOTICS AS SELECTIVE AGENTS IN THE ISOLATION OF STREPTOMYCETES. 17 Sep 58, [25]p. 6 refs.
Order from SLA mi$2.70, ph$4.80 59-10031

Trans. of Il Farmaco; Ed[izione] Sci[entifica] (Italy) 1957, v. 12, no. 2, p. 103-119.

Antibiotics have often been used as selecting agents in the isolation of streptomycetes from soil samples according to the principle that "microorganisms producing certain antibiotics are usually more resistant to the action of those antibiotics than are other organisms not capable of forming such antibiotics" (Waksman). An attempt was made to confirm this rule on some known antibiotics and the corresponding producing species. Several exceptions are discussed and the possibilities of utilization of the Waksman principle in a research program for new antibiotics is emphasized.

Vershigova, A. Ye.
METHODOLOGY OF PREPARING FILTERS FROM GELATIN FOAM FOR BACTERIOLOGICAL INVESTIGATION OF THE AIR. 6 Feb 59, 3p. JPRS 1219-N.
Order from OTS $0.50 59-13124

Trans. of Vrachebnoye Delo [Prilozheniye] (USSR) 1957, p. 106-107.

Modified gelatine foam filters for studying the bacterial content of the air were developed. The mixture comprised 50 g of gelatine, 140 ml distilled water, and 9 ml glycerin. The composition was treated in a desiccator under a vacuum to produce a gelatine foam. The foam was dried in a desiccator under a vacuum with calcium chloride, and it was then cut from sheets of varying thickness into sizes and shapes required for the tests. After using, the pieces of foam were dissolved in 100 ml physiologic saline to obtain a suspension for culturing. The filters had a higher capturing ability than the D'Yakonov apparatus. They can be used in low temperatures and under field conditions when it would be difficult to use other devices.

Voroshilov, A. A. and Dyanova, E. V.
PETROLEUM-OXIDIZING BACTERIA AS INDICATORS OF THE INTENSITY OF THE BIOLOGICAL OXIDATION OF PETROLEUM IN NATURE. [1959] 15p. 10 refs.
Order from LC or SLA mi$2.40, ph$3.30 59-15123

Trans. of Mikrobiologiya (USSR) 1952, v. 21, no. 4, p. 408-415.

A method is presented for evaluating the natural oxidation rate of oil in order that the outflow from oil-bearing drains may be adjusted more accurately to suit individual conditions.

Pathology

RICKETTSIAL DISEASES. 9 Apr 59, 16p.
JPRS: 635-D
Order from OTS $0.50 59-11485

Trans. of mono. Trudy Nauchnoy Sessii Akademii Meditsinskikh Nauk SSSR Sovmestnoy s Ministerstvom Zdravookhraneniya Uzbekskoy SSR, Sostoyavysheysya v Tashkente 20-25 Sentyabrya 1954 (Proceedings of the Scientific Session of the Academy of Medical Sciences, USSR, together with the Ministry of Public Health of the Uzbek SSR, held in Tashkent 20-25 September 1954) Moscow, 1957, p. 33-43.

VIRAL HEMORRHAGIC FEVERS. 9 Apr 59, 21p.
JPRS: 636-D.
Order from OTS $0.75 59-11486

Trans. of mono. Trudy Nauchnoy Sessii Akademii Meditsinskikh Nauk SSSR Sovmestno s Ministerstvom Zdravookhraneniya Uzbekskoy SSR, Sostoyavsheysya v Tashkente 20-25 Sentyabrya 1954 (Proceedings of the Scientific Session of the Academy of Medical Sciences, USSR, together with the Ministry of Public Health of the Uzbek SSR, held in Tashkent 20-25 September 1954) Moscow, 1957, p. 65-78.

As the result of investigations conducted in the Crimea and Omsk oblast by expeditions of the USSR Academy of Medical Sciences, two independent species of viral agents of hemorrhagic fevers were discovered. The clinical aspects, epidemiology, and pathological anatomy of Crimean and Omsk hemorrhagic fever were described in detail, and methods for diagnosing and treating them were developed. In Crimean hemorrhagic fever it was

found possible to treat patients successfully with convalescent serum. A protective vaccine was prepared from the killed virus of Omsk hemorrhagic fever, which was then confirmed experimentally and used successfully for the liquidation of this disease and among the inhabitants of nidi. The vectors of Crimean hemorrhagic fever (the tick N. plumbeum) and Omsk hemorrhagic fever (the tick D pictus) were discovered. It was shown that the viruses may be maintained for a long time in the vectors. It has been shown during the past five to six years that endemic nephroso-nephritis or hemorrhagic fever with renal syndrome exists, apparently with some epidemic variants in the European part of the USSR, outside the Far Eastern nidi. The detailed information that has been obtained regarding the epidemiology and clinical features indicates the viral etiology of the Yaroslav variant of hemorrhagic fever and a probable connection between this disease and infection from murine rodents.

Aleksanyan, A. B.
THE PROSPECTIVE PLAN FOR SCIENTIFIC MEDICAL RESEARCH IN THE ARMENIAN SSR. 30 Mar 59, 8p. JPRS: L-726-N.
Order from OTS $0.50 59-13372

Trans. of Akademiya Meditsinskikh Nauk SSSR. Vestnik, 1958, v. 13, no. 9, p. 62-64.

Deusch, Gustav.
MENOPAUSE AND MYXEDEMA (Klimax und Myxödem). Feb 59, [3]p.
Order from SLA mi$1.80, ph$1.80 59-10704

Summary trans. of Münchener Medizinische Wochenschrift (Germany) 1919, v. 66, pt. 1, p. 589-591. (abstract in Zeitschrift für die Gesamte Neurologie und Psychiatrie Referate, 1919, v. 19, p. 433).

Drozhevkina, M. S.
RESEARCH ON BRUCELLOSIS. 9 Apr 59, 16p. (5 figs. omitted) JPRS: L-730-N.
Order from OTS $0.50 59-13396

Trans. of Zhurnal Mikrobiologii, Epidemiologii i Immunobiologii (USSR) 1951 [v. 22] no. 11, p. 34-37 and 1954 [v. 25] no. 5, p. 24-32.

Foix, Ch., Hilleman, P. and Schalit, I.
ON THE LATERAL SYNDROME OF THE MEDULLA AND THE VASCULAR SUPPLY OF THE UPPER MEDULLA (Sur le Syndrome latéral du Bulbe et l'Irrigation du Bulbe Supérieur). Oct 58, 32p.
Order from SLA mi$3.00, ph$6.30 59-10900

Trans. of Revue Neurologique (France) 1925, v. 1, no. 2, p. 160-179.

Anatomo clinical investigation of the Babinski-Nageotte syndrome of the medulla reveals that there is a lesion of the artery of the lateral fossa of the medulla originating at the basilar trunk, and not a lesion of the inferior cerebellar artery as previously suspected.

Fournier, J. C. M., Ravera, J. J. and others.
ACUTE PSYCHOSES IN MYXEDEMA (Akute Psychosen bei Myxödem). Feb 59 [3]p. 6 refs.
Order from SLA mi$1.80, ph$1.80 59-10702

Trans. of Medizinische Klinik (Germany) 1955, v. 50, [no. 9] p. 357-359.

Two case histories are summarized.

Frignani, R., Damiani, R., and Baldrati, F.
OSTEOGENESIS BY TRANSPLANT OF COSTAL PERIOSTEUM (Osteogenesi da Trapianto di Periostio Costale) tr. by Karl J. Bollinger. Dec 58, 4p. (4 figs. omitted).
Order from SLA mi$1.80, ph$1.80 59-10343

Trans. of Società Italiana di Biologia Sperimentale. Bollettino, 1957, v. 33, Apr, p. 327-330.

Studies have shown that transplated osseous fragments are of considerable importance in the osteogenetic mechanism of the costal periosteum transplant; around these fragments, an intensive proliferation of fibrous connective tissue manifests itself which in deeper layers is supplemented by cellular elements of embryonic characteristics and by osteoblasts. In the area of this newly formed connective tissue one can notice the later appearance of new osseous tissue which always takes place close to the fragments of transplanted bone by the way of reabsorption. It is to be presumed that the same bony fragments transplanted with the periosteum act in the subsequently ensuing process of destruction as sources of calcium necessary for the mineralization of the newly formed tissue: Another factor which has to be taken into consideration in providing favorable conditions for the formation of osseous tissue is the optimal blood supply which is carried by the pedicle of the transplanted musculo-periosteal flap. This is confirmed by the fact that free periosteal grafts, taken from the tibia, have all given negative results.

Grabner, H.
CAUSAL THERAPY OF CIRCULATORY DISORDERS WITH VITAMIN B_{12} IN LARGE DOSES? [1958] 17p.
Order from SLA mi$2.40, ph$3.30 59-10818

Trans. of Münchener Medizinische Wochenschrift (West Germany) 1958, v. 100, no. 44, p. 1700-1704.

Eight cases of circulatory disorders, in patients 38 to 76 yr old, were clinically treated with parenterally administered doses of vitamin B_{12}. The minimum dose was 1000 gamma/day in 10 injections, and, after attaining a total dosage of 10,000 gamma, intramuscular and/or subcutaneous injections were given according to the case being treated. In view of clinical results, the author claims vitamin B_{12} to be the indicated therapy not only for cardiac anomalies but also for such areas as geriatrics, pediatrics, diabetes mellitus, ulcer, rheumatic diseases and neurologic and psychiatric disorders. B_{12} therapy is claimed not as a cure. In view of the time factor, it should be presently used only by the clinician and not by the general practicioner.

Israel, James.
NEW OBSERVATIONS IN THE FIELD OF MYCOSES IN MAN (Neue Beobachtungen auf dem Gebiete der Mykosen des Menschen) tr. by R. A. Pyka. 5 Dec 58, [2]p.
Order from SLA mi$1.80, ph$1.80 59-10348

Summary trans. of [Virchow's] Archiv f[ür] Pathologische] Anatomie und Physiologie und Klinische Medizin (Germany) 1878, v. 74, p. 15-53.

Ivanova, M. A.
IN THE PRESIDIUM OF THE ACADEMY OF MEDICAL SCIENCES USSR. 30 Apr 59, 6p.
JPRS: 696-D
Order from OTS $0.50 59-11538

Trans. of Akademiya Meditsinskikh Nauk SSSR. Vestnik. 1958 [v. 13] no. 8, p. 93-95.

Kaliman, P. A.
THE EXCRETION OF ADRENALIN AND ADRENALIN-LIKE SUBSTANCES IN THE URINE OF NORMAL RABBITS AND DURING EXPERIMENTAL DIETARY HYPERCHOLESTERINEMIA AND ATHEROSCLEROSIS. 23 Mar 59, 9p. 19 refs.
JPRS: L-712-N.
Order from OTS $0.50 59-13338

Trans. of Problemy Endokrinologii i Gormonoterapii (USSR) 1958, v. 4, no. 2, p. 26-30.

A study of rabbits in the normal state, showed a frequent absence of either adrenalin or adrenalin-like substances in the urine. The excretion of adrenalin in the urine of normal rabbits usually involves conjugated forms. Adrenalin-like substances (precursors of adrenalin and certain conversion products of adrenalin) are also excreted in the urine. With the progression of experimentally-induced hypercholesterolemia (atherosclerosis), there are changes in the excretion of adrenalin and adrenalin-like substances: there is an initial increase in the frequency with which adrenalin-like substances are found in the urine, whereas there is a sharp decline in the later stages. At the onset of feeding cholesterol to rabbits, adrenalin and adrenalin-like substances are usually excreted in the urine in the free form, and less often in the combined form, which leads to the suspicion of disturbances of the mechanism of detoxification of these compounds from physiologically-active structures to pharmacologically-inactive compounds.

Karandeyev, S. Ye.
ACTIVITIES OF THE DIVISION OF MEDICO-BIOLOGICAL SCIENCES OF THE ACADEMY OF MEDICAL SCIENCES. 17 Apr 59, 13p. JPRS: 665-D.
Order from OTS $0.50 59-11517

Trans. of Akademiya Meditsinskikh Nauk SSSR. Vestnik, 1958, v. 13, no. 3, p. 86-93.

Konstantinova, V. V. and Libinzon, R. Ye.
THE CONTENT AND SYNTHESIS OF NUCLEIC ACIDS IN THE LIVER DURING SUBACUTE PLUTONIUM INTOXICATION. 16 Mar 59, 11p. (2 figs. omitted) 17 refs. JPRS: L-691-N.
Order from OTS $0.50 59-13299

A determination of the nucleic acid content and the intensity of uptake of P^{32} in RNA [ribonucleic acid] and DNA [desoxy-ribonucleic acid] of the rat liver was made one to two weeks and one to two months after the administration of 0.02 microcuries per gram of a solution of plutonium nitrate. The quantity of RNA was increased one and two months after the administration of plutonium. The quantity of DNA was considerably below normal, beginning with two weeks and at all subsequent periods of the investigation. The permeability of the liver tissue to radioactive phosphorus is increased after plutonium intoxication. The rates of formation of RNA and DNA were increased at almost all the periods of investigation.

Kudryavtseva, N. P.
EXPERIMENTAL DIPHTHERIA IN SENSITIZED AND IMMUNIZED GUINEA PIGS. 23 Mar 59, 7p. 7 refs.
JPRS: 1376-N.
Order from OTS $0.50 59-13320

Trans. of Patologicheskaya Fiziologiya i Eksperimental'naya Terapiya (USSR) 1958, v. 2, no. 5, p. 17-20.

Guinea pigs weighing from 300 to 400 grams were sensitized by specific antigens (ordinary diphtheria toxoid of the 335 series, 35 antitoxic units per cubic centimeter; diphtheria vaccine containing two billion microbial bodies per cubic centimeter) or non-specific antigens (normal horse serum, Martin's bouillon). Results showed that a subsequent infection with a diphtheritic culture leads to a stormy diphtheritic infection of toxic-allergic type. The disease picture corresponds to the malignant hemorrhagic diphtheria of children. Specific (diphtheria vaccine, toxoid) and non-specific (normal horse serum) sensitization can to an equal degree contribute to a severe course of the diphtheria infection. The phenomena of specific sensitization were observed after single as well as after repeated inoculations (with violations of the intervals between the inoculations). Where the inoculations are not completed, an allergic reorganization of the body may occur, leading to a stormy reaction to infection with the specific causal organism. In the presence of a strong immunity, the severe course of diphtheritic infection was not seen. For the purpose of creating a stronger immunity, in which the development of diphtheritic infection is prevented, it is necessary to observe strictly the "law of intervals" between the inoculations and also to use diphtheria toxoids which are as much as possible free of ballast bacterial protein for prophylactic purposes.

Nahnsen, L.
EXPERIENCES IN PEDIATRICS WITH A LONG-ACTING SULFONAMIDE (Erfahrungen mit einem Protrahiert Wirkenden Sulfonamid in der Kinderheilkunde). [1958] 8p.
Order from SLA mi$1.80, ph$1.80 59-10840

Trans. of Die Medizinische (West Germany) 1958 no. 36, p. 1400-1401.

The sulfonamide Orisul, a 3-(p-amino-benzolsulfonamido)-2-phenyl-pyrazole, was administered orally in tablet form (1 tablet=.5 g) and perorally as a 5% syrup to 235 children, suffering from a wide range of illness (febrile throat infection, purulent tonsillitis, pseudocroup, otitis media, sinusitis, bronchitis and spastic bronchitis, bronchopneumonia, enteritis, pyuria, and balanitis). Dosages were .07 g/kg for infants, 1 g/kg for 1 to 6 yr olds and 1.5 g/kg for 6 to 14 yr olds. Treatment lasted for 2 to 16 days with an average of 5 to 10 days. Clinical investigation of 216 of the cases revealed that a good effect was reached in 70%, an insufficient effect in 19% and an absence of the desired effect in 11%. Damage to the kidneys and blood forming organs was not observed. In cases where Orisul had no effect (e.g., febrile throat infections, pyuria and enteretis infections) there was a bacterial agent present or suspected. Thus, Orisul is indicated as sulfonamide therapy in pediatrics due to its low dosage, good tolerance and prolonged effect which makes single daily doses possible.

Permyakov, N. K. and Suslov, A. M.
CLINICO-ANATOMICAL CONFERENCES OF THE MOSCOW CITY SCIENTIFIC RESEARCH INSTITUTE IMENI SKLIFOSOVSKIY DURING 1953-1956 AND SOME DATA ON THE COMPARISON OF CLINICAL AND ANATOMICAL DATA. 23 Mar 59, 14p. JPRS: L-708-N.
Order from OTS $0.50 59-13334

Trans. of Arkhiv Patologii (USSR) 1958, v. 20, no. 4, p. 89-95.

A total of 37 selected case histories is summarized, and conclusions are drawn on the correlation of clinical diagnosis and postmortem findings. Divergences occurred most frequently in cases in which biopsy was impossible. Approximately 1/3 of the diagnostic errors stemmed from imprecise localization or classfication of terminal-stage neoplasms.

Shamayeva, Ye. M., Mayorova, N. A., and Khaleyeva, T. G.
THE EFFECT OF NOVOEMBICINE ON THE COURSE OF THE ARTHUS-SAKHAROV PHENOMENON AND ANAPHYLACTIC SHOCK. 23 Mar 59, 7p. (2 figs. omitted) 11 refs. JPRS: 1379-N.
Order from OTS $0.50 59-13323

Trans. of Patologicheskaya Fiziologiya i Eksperimental'naya Terapiya (USSR) 1958, v. 2, no. 5, p. 29-33.

After the single injection of novoembicine in a dose of 1.5 milligrams per kilogram four days before the performance of a skin test, the Arthus-Sakharov phenomenon in rabbits is expressed less markedly, necroses observed less often, and the hyperemia and edema disappear more rapidly. No parallelism was observed between the degree of development of the Arthus-Sakharov phenomenon and the precipitin titer or the depression of leucopoiesis. The effect of novoembicine on anaphylactic shock in guinea pigs is less distinct. After an inadequately expressed picture of shock, a slight decrease in the percentage of death of the animals is observed.

Sudeck, P.
ABOUT THE ACUTE INFLAMMATORY BONE ATROPHY (Über die Acute Entzündliche Knochenatrophie). Dec 58, 7p. (5 figs. omitted).
Order from SLA mi$1.80, ph$1.80 59-10698

Trans. of Archiv für Klinische Chirurgie (Germany) 1900, v. 62, p. 147-156.

Sudeck's classical case history is here translated in full.

Syrkin, A. L.
THE INVESTIGATION OF THE RESORPTION OF SODIUM-24 FROM AN INTRADERMAL SKIN DEPOT IN RHEUMATISM. 1 Apr 59, 11p. (4 figs omitted) 16 refs. JPRS: L-717-N.
Order from OTS $0.50 59-13358

Trans. of Terapevticheskiy Arkhiv (USSR) 1958, v. 30, no. 3, p. 70-76.

Studies of resorption of sodium-24 from the intradermal depots disclosed two types of changes of resorption in rheumatism. Slowing of resorption is associated with circulatory insufficiency and may occur both in active rheumatism and in the presence of cold lesions in the heart. While acceleration of resorption is associated with elevated permeability of capillaries and of pericapillary connective tissues. Normal rates of resorption in some patients with rheumatism are the result of a mutal levelling-out of opposed effects of the two factors - circulatory insufficiency and increased permeability of capillaries and connective tissues. The correspondence between the rate of resorption and the titer of antihyaluronidase in the blood of patients with rheumatism confirms the presence of a connection between accelerated resorption and changes in the state of the connective tissues. The rate of resorption does not always change in parallel with the clinical findings. Resorption may be accelerated in the absence of other signs of rheumatic processes, which questions the usefulness of this method in the differential diagnosis of rheumatism.

Zhukovskiy, M. A.
ON SINO-SOVIET COOPERATION IN THE FIELD OF MEDICAL SCIENCE. 19 Mar 59, 4p. JPRS: 1374-N.
Order from OTS $0.75 59-13314

Trans. of Akademiya Meditsinskikh Nauk SSSR. Vestnik. 1958, v. 13, no. 4, p. 62-63.

Pharmacology and Toxicology

REFERATIVNYY ZHURNAL. BIOLOGIYA (USSR) 1958, NO. 8 (Soviet Abstracts. Biology) 21 Jan 59, 1v. JPRS(NY)-1153.
Order from OTS $1.00 59-13062

Contents:
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Complete translations of those entries which were originally published in the Sino-Soviet bloc and in Yugoslavia.

Areshkina, L. Ya.
ALL-UNION CONFERENCE ON VITAMINS (NO. 4). 3 Apr 59, 6p. 8 refs. JPRS: L-695-N.
Order from OTS $0.50 59-13309

Trans. of Akademiya Nauk SSSR. Izvestiya. Seriya Biologicheskaya 1958, no. 3, p. 377-379.

Bagdasarov, A. A., Vasil'yev, P. S. and From, A. A.
THE PROBLEMS OF CLASSIFICATION OF BLOOD SUBSTITUTES. 19 Mar 59, 6p. 11 refs. JPRS: 1373-N.
Order from OTS $0.50 59-13313

Trans. of Akademiya Meditsinskikh Nauk SSSR. Vestnik. 1958, v. 13, no. 4, p. 58-61.

A clinical classification of blood-substitutes based on the consideration of the purpose of their therapeutic effect is proposed.

Bock, K. D., Dengler, H. and others.
STUDIES ON THE EFFECT OF SYNTHETIC HYPERTENSIN II ON ELECTROLYTE METABOLISM, RENAL FUNCTION AND CIRCULATION IN MAN (Untersuchungen über die Wirkung von Synthetischem Hypertensin II an Elektrolythaushalt, Nierenfunktion und Kreislauf beim Menschen). [1958] [20]p. (Includes foreign text).
Order from SLA mi$2.40, ph$3.30 59-10456

Trans. of Klinische Wochenschrift (Germany) 1958, v. 36, no. 17, p. 808-814.

Experiments testing the effects of hypertensin II amide on renal function, blood pressure and expecially electrolyte metabolism, showed that there is a linear relationship between the log dosage of synthetic hypertensin II amide and its effects. Use of the infusion method in the state of mild diuresis showed that hypertensin II amide causes a reduction in PAH inulin clearance. The sulfosolicyalic acid method for the determination of protein content showed no measurable proteinuria while the RIVA-Rocci method for blood pressure determination showed a definite increase in blood pressure and a decrease in pulse rate.

Freyschuss, S., Lindstrom, O. and others.
INVESTIGATION OF HEALTH HAZARD IN CONNECTION WITH THE USE OF ORGANIC MERCURY COMPOUNDS IN PAPERMILLS AND EXPORT GROUNDWOOD MILLS. Jan 59, 18p. 14 refs. (6 figs. 4 tables omitted).
Order from SLA mi$2.40, ph$3.30 59-10983

Trans. of Svensk Pappers-Tidning (Sweden) 1958, v. 61, no. 18, p. 568-580.

Effective slime counteraction and reliable preservation of export pulp is a vital necessity for our paper and pulp mills. Industrial hygiene, paper mills, the wood pulp industry and chemical preservative manufacturers have all one interest in common, namely the use of poisonous chemicals with all conceivable precautions, avoiding even slight exposure of personnel. This objective should be capable of attainment through the co-operation of the parties concerned.

Grashchenkov, N. I. and Kassil', G. N.
USE OF NASAL REFLEX THERAPY IN MEDICAL PRACTICE, tr. by Paul V. DePorte. 7 June 56, 15p. 4 refs.
Order from LC or SLA mi$2.40, ph$3.30 59-10988

Trans. of Klinicheskaya Meditsina (USSR) 1955, v. 33, no. 9, p. 12-17.

Successful clinical experience in outpatient treatment of peptic ulcer by nasal iontophoresis is described in detail. Nasal iontophoresis has been used successfully for treatment of various types of headache and of trigeminal neuralgia. Possible applications of the technique in a variety of pathological conditions are considered.

Kraft, H. G.
STUDIES ON THE BLOOD PRESSURE REACTION IN GUINEA PIGS AFTER DIFFERENT METHODS OF ADMINISTERING BRONCHOSPASTIC SUBSTANCES (Untersuchungen über die Blutdruckreaktion am Meerschweinchen nach Verschiedenartiger Applikation von Bronchospastisch Wirkenden Substanzen). [1958] 12p. (3 figs. omitted) 30 refs.
Order from SLA mi$2.40, ph$3.30 59-10755

Trans. of [Naunyn-Schmiedeberg's] Arch[iv für] Exp[erimentelle] Path[ologie und] Pharmakol[ogie] (Germany) 1958, v. 234 [no. 5] p. 426-431.

The influence of serotonin, histamine, pilocarpine and acetylcholine on different factors of respiration and on the blood pressure reaction of spontaneously breathing guinea pigs and those under artificial respiration was examined. The drugs were administered either as an aerosol or intravenously. In all cases intravenous administration produced a fall of blood pressure distinctly depending on the dose and paralleling the respiratory change. Spray application showed a marked change of respiration, but only a trace of blood pressure reaction or none at all.

Milletti, M. and Bianchini, E.
THE TOXICOLOGY OF CIGARETTE SMOKE AND THE DEFENCE ACTION OF FILTERS. [1958] [3]p. 23 refs.
Order from SLA mi$1.80, ph$1.80 59-10332

Trans. of Chimica, Milan (Italy) 1956, v. 12, p. 511-513.

Perkow, Werner
CONSTITUTION AND ACTION OF BIOLOGICALLY ACTIVE COMPOUNDS (Konstitution und Wirkung biologisch aktiver Verbindungen). [1959] 11p. 5 refs. Tr57-134.
Order from SLA mi$2.40, ph$3.30 59-10575

Trans. of Zeit[schrift] für Naturforsch[un]g (West Germany) 1957, v. 12b, no. 4, p. 232-237.

Rittel, W., Iselin, B. and others.
SYNTHESIS OF A HIGHLY ACTIVE HYPERTENSIN II-AMIDE (L-ASPARAGYL-L-ARGINYL-L-VALYL-L-TYROSYL-L-ISOLEUCYL-L-HISTIDYL-L-PROLYL-L-PHENYLALANINE) (Synthese eines Hochwirksamen Hypertensin II-Amids (L-Asparagyl-L-Arginyl-L-Valyl-L-Tyrosyl-L-Isoleucyl-L-Histidyl-L-Prolyl-L-Phenylalanin)). [1958] 22p. 17 refs.
Order from SLA mi$2.70, ph$4.80 59-10449

Trans. of Helv[etica] Chim[ica] Acta (Switzerland) 1957, v. 40, no. 3, p. 614-624.

The synthesis of Ileu^5-hypertensin II-Asp-β-amide, L-Asparaginyl-L-arginyl-L-valyl-L-tyrosyl-L-isoleucyl-L-histidyl-L-prolyl-L-phenylalanine, is described. The highly purified octapeptide is 5 to 10 times as active as noradrenaline on the blood pressure of the rat in the experimental set up of Peart, (Biochem. J. 59: 300, 1955), and 2 to 4 times as active as Val^5-hypertensin I, isolated from bovine plasma (Biochem. J. 62: 520, 1956).

Sevčik, V[ladimir], Podojil, M[iloslav] and Vrtišková, A[lena].
USE OF PAPER CHROMATOGRAPHY IN RESEARCH ON NEW ANTIBIOTICS. [1958] 14p. 11 refs.
Order from SLA mi$2.40, ph$3.30 59-10925

Trans. of Ceskoslovenká Mikrobiologie, 1957, v. 2, p. 175-182.

The summarized chromatographic method of Ishida et al. (J. Antibiotics (Tokyo) A4: 505, 1951) was modified so that it is useful not only as a means of identification of unkown antibiotics but also as a guide for the extraction of rough preparates of antibiotics from fermentation liquids and for their further purification. Results of this modification, carried out on streptomycin, actinomycin B, chloramphenicol and antibiotic BU607 (isolated from an unidentified strain of actinomyces), are given, taking into consideration the effect of the nutrient media on the mobility of the antibiotic, solubility of the antibiotic in the mobile phase (solvent) and immobile phase (H_2O), R_f values and suitable eluents. Moist and anhydrous n-butanol and ether were used to develop the chromatograms, however anhydrous solvents were most effective. Solvents forming an elutropic series were used.

Trakhtenberg, D. M., Rodyonovskaya, E. I. and others.
PRELIMINARY DATA ON THE COMPARISON OF THE PROPERTIES OF STREPTOTHRICIN-TYPE ANTIBIOTIC SUBSTANCES WHICH ARE PRODUCED BY VARIOUS ACTINOMYCETES. [1959] 6p.
Order from ATS $7.50 ATS-32L30R

Trans. of Antibiotiki (USSR) 1958, v. 3, no. 6, p. 36-41.

Weese, H.
MODERN HYPNOTICS THERAPY AND BASAL ANESTHESIA. [1958] [23]p. (1 fig. 3 tables, refs. omitted).
Order from SLA mi$2.70, ph$4.80 59-10821

Trans. of [Naunyn-Schmiedeberg's] Arch[iv für] Exp[erimentelle] Pathol[ogie und] Pharmakol[ogie] (Germany) 1936, v. 181, no. 1, p. 46-61.

Zapadnyuk, V. I.
THE EFFECT OF ADRENOCORTICOTROPIC HORMONE AND CORTISONE ON THE BASIC PROCESSES OF THE CEREBRAL CORTEX.
23 Mar 59, 11p. (4 figs. omitted) 13 refs. JPRS: L-711-N.
Order from OTS $0.50 59-13337

Trans. of Problemy Endokrinologii i Gormonoterapii (USSR) 1958, v. 4, no. 2, p. 14-22.

Experiments on 3 adult male dogs showed (1) ACTH and cortisone exert a pronounced effect on the basic processes of the cerebral cortex. Optimal doses of these drugs shorten the latent period and increase the magnitude of conditioned reflexes. (2) ACTH intensifies and concentrates internal inhibition, and is especially effective in intensifying suppressive inhibition. (3) Test results have shown that the action of ACTH and cortisone depends on the native strength of the cortical processes. In animals of the weak type of nervous system, overstress of the cortical cells occurs more quickly and with lower doses of the preparations; protective inhibition also appears with lower doses of these drugs in such animals.

Radiobiology

Bagramyan, E. R.
THE PROTECTIVE AND THERAPEUTIC EFFECT OF HORMONES ON THE ACTION OF IONIZING RADIATIONS ON ANIMALS AND HUMANS.
23 Mar 59, 18p. 66 refs. JPRS: 1388-N.
Order from OTS $0.50 59-13339

Trans. of Problemy Endokrinologii i Gormonoterapii (USSR) 1958, v. 4, no. 2, p. 115-122.

A review is presented of the findings in the literature on the use of various hormone preparations as prophylactic and therapeutic substances in counteracting the effects of ionizing radiation on animals and man.

Brandt, H. v. and Dittrich, W.
INDUCED BREAKS OF THE X^{c2} RING CHROMOSOME OF DROSOPHILA MELANOGASTER AFTER IRRADIATION WITH X-RAYS AND FAST ELECTRONS. [1959] 12p. (2 figs. omitted) 19 refs. AEC-tr-3478.
Order from SLA mi$2.40, ph$3.30 59-10452

Trans. of Strahlentherapie (West Germany) 1953, v. 91 [no. 1] p. 149-153.

Males of an X^{c2} strain of Drosophila melanogaster were irradiated with various doses of fast electrons from a 6-mev betatron and with X-rays (180 kV). Immediately after irradiation the males were bred with Berlin normal females. The F_1 generation produced by fully-developed spermatozoa exhibited a more or less marked deficit of females, the investigations covering a total of 350,000 flies. The results were compatible with the assumption of a linear increase of the deficit of females with dosage within the dosage range investigated, from 0 to 6,000 roentgens. The X-ray experiments made it at least highly probable that the effect increases with the dose for X-rays, and the same holds true for fast electrons in the more highly scattering electron experiments. No difference in the action of the two types of rays could be found. The ring-X method is not very suitable in the form employed here for a more precise comparison of the biological activity of different types of ionizing rays.

Eberhardt, K.
COMPARISON OF THE ACTION OF X-RAYS AND NEUTRON BEAMS IN PRODUCING CHROMOSOME BREAKS IN DROSOPHILA MELANOGASTER. [1959] 3p. 12 refs. AEC-tr-3476.
Order from SLA mi$1.80, ph$1.80 59-10536

Trans. of Die Naturwissenschaften (Germany) 1943, v. 31, p. 23.

Catsch, A., Peter, O., and Welt, P.
COMPARISON OF THE ACTION OF X-RAYS AND FAST NEUTRONS IN PRODUCING CHROMOSOME MUTATIONS IN DROSOPHILA MELANOGASTER. [1959] 3p. 9 refs. AEC-tr-3477.
Order from SLA mi$1.80, ph$1.80 59-10535

Trans. of Die Naturwissenschaften (Germany) 1943, v. 32, p. 23.

Czech, H., Czech, R., and Schmermund, H. J.
COMPARATIVE STUDIES OF THE EFFECT OF FAST ELECTRONS AND X-RAYS ON THE CORNEA OF SALAMANDER LARVAE. [1959] 7p. (5 figs. omitted) 13 refs. AEC-tr-3472.
Order from SLA mi$1.80, ph$1.80 59-10451

Trans. of Strahlentherapie (West Germany) 1950, v. 81 [no. 2] p. 187-192.

The biological effectiveness of fast electrons and X-rays on the mitotic changes of the primary effect has been tested. Qualitative differences between the mitotic disturbances under the influence of the two types of radiation were not observed. It could, however, be shown that the frequency of pathological changes in mitotic cells after electron irradiation is smaller per unit dose than after X-ray irradiation.

Gorizontov, P. D., Grafov, A. A. and Shakhodyrov, V. V.
THE PROBLEM OF THE ROLE OF THE HYPOPHYSEAL-SUPRARENAL SYSTEM IN THE DEVELOPMENT OF CERTAIN MANIFESTATIONS OF EXPERIMENTAL RADIATION SICKNESS. 30 Mar 59, 14p. (6 figs. omitted) 18 refs. JPRS: L-724-N.
Order from OTS $0.50 59-13370

Trans. of Akademiya Meditsinskikh Nauk SSSR. Vestnik, 1958, v. 13, no. 9, p. 12-21.

Experiments on male white rats showed that preliminary removal of the suprarenals can check the development of lymphopenia and eosinopenia only during the first few hours after a single total irradiation with a dose of 300, 600 and 800 r. At the end of the first day, the degree of leucopenia, lymphopenia and eosinopenia in the adrenalectomized rats is expressed to an even greater extent than in the intact irradiated rats. The greater the dose of total irradiation the less prolonged and weaker is the effect of the suprarenals on the development of lympho- and eosinopenia. Therefore, with the increase in the total dose of irradiation, the role of the hypophyseal-suprarenal system is decreased in the development of early hematologic changes. Morphologic changes occurring after total irradiation in organs in which lymphocytes are formed (lymph nodes, thymus and spleen) in adrenalectomized irradiated rats are not so well expressed at the end of the first day after irradiation as in the intact rats. Comparison of these changes with the composition of the peripheral blood shows that a decrease in the number of lymphocytes in the irradiated animals occurs sooner than the structural disturbances occur in the foci where lymphocytes are formed. Experiments with the local irradiation of the hypophyseal area (one square centimeter) and of the area of the thigh (three square centimeters) with a dose of 3000 r showed that the irradiation of the hypophyseal area produces more severe changes in the peripheral blood. Preliminary adrenalectomy prevents the development of lympho- and eosinopenia in irradiation of the thigh area but does not prevent the reduction of these elements in the peripheral blood after irradiation of the hypophyseal area. This attests to the role of the inter-brain in the development of the hematologic changes after irradiation of the area of the hypophysis. After a total or local irradiation of intact as well as of adrenalectomized rats, a neutrophilia develops. Therefore, the hypophyseal-suprarenal system does not exert any essential influence on the change in the number of neutrophils in the peripheral blood of irradiated animals.

Höhne, G. and Schubert, G.
THE PRODUCTION OF CHROMOSOME MUTATIONS IN DROSOPHILA MELANOGASTER BY FAST ELECTRONS AND X-RAYS. [1959] 11p. (2 figs. omitted) 23 refs. AEC-tr-3474.
Order from SLA mi$2.40, ph$3.30 59-10454

Trans. of Strahlentherapie (West Germany) 1954, v. 94 [no. 1] p. 72-78.

The effects of fast electrons and 200 kv X-rays in inducing chromosomal mutationsin Drosophila melanogaster were determined. It was found, for the reciprocal translocations between chromosome II and III, which are amenable to detection by crossing analysis, that the rate of radiation-induced mutation increases more rapidly than in direct proportion to the dose, and may best be represented by a dosage-dependence curve with an exponent of 1.3. No difference in the effectiveness of radiations substantially differing in their differential ionization could be found; the relative effectiveness of the fast electrons is about 1. The fact that all the induced mutation rates found in this reaction were higher than those found in previous studies is attributed to the influence of the higher intensity (dose-rate) of the radiation doses now administered.

Il'chevich, N. V. and Kozak, V. A.
CHANGES IN THE FUNCTIONAL CONDITION OF THE CARDIOVASCULAR SYSTEM DURING RADIATION SICKNESS. 12 May 59, 7p. (12 figs. omitted) 10 refs. JPRS: L-764-N.
Order from OTS $0.50 59-13463

Trans. of Fiziologichnyy Zhurnal (USSR) 1958, v. 4, no. 6, p. 775-781.

Kovalev, I. F.
CRITIQUE OF CERTAIN FUNDAMENTAL CONCEPTIONS IN RADIOBIOLOGY. 17 Mar 59, 9p. 18 refs. JPRS: 1323-N.
Order from OTS $0.50 59-13271

Trans. of Vestnik Rentgenologii i Radiologii (USSR) 1958, v. 33, no. 3, p. 52-57.

A further discussion is presented on questions discussed by S. A. Reynberg (Vestnik Rentgenologii i Radiologii, USSR, 30: 3-10, 1955) and criticized by N. D. Perumova (Vestnik Rentgenologii i Radiologii, USSR, 31: 51-54, 1956).

Kurshakov, N. A.
DEVELOPMENT OF LEUKOSES AS A REMOTE SEQUENCE OF RADIATION SICKNESS. 19 Mar 59, 11p. 18 refs. JPRS: 1372-N.
Order from OTS $0.50 59-13312

Trans. of Akademiya Meditsinskikh Nauk SSSR. Vestnik. 1958, v. 13, no. 4, p. 27-32.

This discussion is largely based on statistics of leukemia cases following the bomb bursts at Hiroshima and Nagasaki.

Lebedinskiy, A. B., ed.
SOVIET SCIENTISTS CONCERNING THE DANGERS OF NUCLEAR-WEAPON TESTS. 14 May 59, 110p. JPRS: 719-D.
Order from OTS $2.50 59-11547

Trans. of mono. Sovetskiye Uchenyye ob Opasnosti Ispytaniy Yadernogo Oruzhiya, Moscow, 1959.

Contents:
Preface, by I. V. Kurchatov
The danger of nuclear weapons tests, by A. V. Lebedinskiy
The book by E. Teller and A. Latter, Our Nuclear Future, by O. I. Leypunskiy
Radioactive carbon of nuclear explosions and nonthreshold biological effects, by A. D. Sakharov
Contamination of the biosphere in the environs of Leningrad by products of nuclear explosions, by V. P. Shvedov, L. I. Gedeonov
Entry of radioactive strontium into plants and accumulation of it in the harvest of various agricultural crops, by V. M. Klechkovskiy, I. V. Gulyakin
Research on the content of radioactive strontium in the atmosphere, soil, food products, and human bones, by B. V. Kurchatov, and others
Radiation and human heredity, by N. P. Dubinin
Cytogenetic consequences of the action of radiation upon the spermatogenesis of monkeys, by G. G. Tinyakov, M. A. Aresen'yeva
Blastomogenic action of radioactive strontium, by N. A. Krayevskiy

Malenkova, K. M.
CHANGES OF CERTAIN BLOOD BIOCHEMICAL VALUES DUE TO THE ACTION OF X-RAYS. 17 Mar 59, 3p. JPRS: 1326-N.
Order from OTS $0.50 59-13274

Trans. of Vestnik Rentgenologii i Radiologii (USSR) 1958, v. 33, no. 3, p. 74.

Results are presented of a study of the weight, erythrocyte count, hemoglobin, iron, and also the figures for oxygen capacity of the hemoglobin of whole blood in rabbits exposed to total irradiation once with hard X-rays in a dose of 500 R. The observations were made one hour, one week, three weeks and one month after the irradiation.

Minasov, V. S.
THE EFFECT OF CERTAIN ANTIHISTAMINIC AND SEDATIVE PREPARATIONS ON THE COURSE OF THE SKIN REACTION IN LOCAL IRRADIATION BY RADIOACTIVE PHOSPHORUS. 17 Mar 59, 6p. 9 refs. JPRS: 1328-N.
Order from OTS $0.50 59-13276

Trans. of Vestnik Rentgenologii i Radiologii (USSR) 1958, v. 33, no. 3, p. 76-79.

Experimental investigations, which had the aim of reducing the reactivity of the skin to the beta-rays of P^{32} with the aid of certain medicinal agents as well as by giving fractional irradiation, indicated that drug-induced sleep produced by sodium amytal as well as by dimedrol reduced the skin reaction to the local effect

of radioactive phosphorus. Combined use of sodium amytal and dimedrol was particularly effective. Histopathological investigations showed that in the skin of rabbits under the influence of sodium amytal (to a lesser degree, dimedrol) and which had been exposed to beta-irradiation the signs of atypism of the epidermal cells and elimination of the boundaries between epidermis and dermis were distinctly reduced. This fact is of particularly great importance when we take into consideration the fact that specifically the epidermal atypism can be one of the basic factors in the development of serious remote complications produced by the effect of beta-rays, particularly a cause of malignant growth. Fractional beta-irradiation is better tolerated than a single irradiation of the skin with the same dose of radioactive phosphorus.

Movsesyan, M. A.
ON CERTAIN DEBATABLE QUESTIONS IN RADIOBIOLOGY. 13 Mar 59, 4p. JPRS: 1324-N.
Order from OTS $0.50 59-13272

Trans. of Vestnik Rentgenologii i Radiologii (USSR) 1958, v. 33, no. 3, p. 58-59.

Pobedinskiy, M. N.
RADIATION SICKNESS PREVENTION BY MEDICINES AND CHEMICALS (Preduprezhdeniye Luchevoy Bolezni Medikamentoznymi i Khimicheskimi Sredstvami). [1959] 2p.
Order from LC or SLA mi$1.80, ph$1.80 AEC-tr-3573

Trans. of mono., Luchevaya Bolezn' (Radiation Sickness) Moscow, 1957, p. 53-55.

Reiher, K. H. and Lang, G.
THE DAMAGING EFFECT OF P^{32} ON THE OVARY, tr. by B. Kawin. 20 Oct 58, 14p. 28 refs. HW-56559.
Order from SLA mi$2.40, ph$3.30 59-10323

Trans. of Strahlentherapie (West Germany) 1955, v. 98, p. 453-463.

A study was made of intravenous injections of radiophosphorus into albino rats. One group received 0.3 μc/g, another group 0.6 μc/g, and a third group 1.2 μc/g of P^{32}. Morphological changes of the ovaries after several periods of time amounting to 36 hours, 3, 6, 12 and 30 days were investigated. Morphological changes were found only at a dose of 1.2 μc/g.

Santotskiy, M. I.
THE EFFECT OF CONDITIONALLY LOW DOSES OF X-RAYS ON THE PENETRABILITY OF THE CAPILLARY WALLS IN THYROTOXICOSIS.
25 Mar 59, 4p. JPRS: L-715-N
Order from OTS $0.50 59-13351

Trans. of Vestnik Rentgenologii i Radiologii (USSR) 1958, v. 33, no. 2, p. 82-83.

Stetsenko, N. D.
CHANGES OF THE FUNCTIONAL CONDITION OF THE HEART IN INTERNAL IRRADIATION BY RADIOACTIVE PHOSPHORUS (ELECTROCARDIOGRAPHIC INVESTIGATION). 17 Mar 59, 2p.
JPRS: 1325-N.
Order from OTS $0.50 59-13273

Trans. of Vestnik Rentgenologii i Radiologii (USSR) 1958, v. 33, no. 3, p. 66.

The electrocardiographic observations were made experimentally on three dogs which had been given P^{32} directly into the blood stream. The injection of the non-radioactive sodium salt of orthophosphoric acid produced an increase in the frequency of cardiac contractions for 40 min without any notable changes in the shape or amplitude of the waves. P^{32} was injected into the dogs on the second day in the form of an isotonic solution, with the addition of buffering agents, in doses of from 0.1 to 1.0 mc/kg of weight of the animal. The first electrocardiogram was taken after 7 to 12 min. Over the course of the two hours following the injection of P^{32} several tracings were made, and in the next four days electrocardiography was carried out daily, and then on the eighth, 12th, 16th and 21st days. After the administration of P^{32}, electrocardiographic changes were expressed in a decrease in voltage, and less often in changes in the shape of the waves and inversion of the waves. Within the limits of the dosages used, P^{32} exerted an influence on the function of conductivity and contractility of the myocardium. Using the maximum dosage (one millicurie per kilogram of weight), the absorbed energy of the beta-particles amounted to 0.04 ergs/g/sec. Changes of excitability and conductivity of a nerve of a cold-blooded animal occurred after an absorption of energy of beta-particles equal to 13 ergs/g/sec, and changes occurred in the electroencephalogram of dogs after absorption of energy equal to 0.04 ergs/g/sec; these doses were not the limiting doses.

Strelin, G. S.
SOME MECHANISMS OF THE BIOLOGICAL ACTION OF IONIZING RADIATION. [1959] 12p. 34 refs.
Order from CCT $47.25 CCT-507TT

Trans. of Meditsinskaya Radiologiya (USSR) 1956, v. 1, no. 1, p. 27-35.

As a result of his own research and that of others, the author draws the following conclusions about regeneration. Selective suppression of the processes of physiological and reparative regeneration is a characteristic feature of the biological action of ionizing radiation; this feature can be demonstrated in very diverse biological material. Lesions caused by irradiation can be clearly seen morphologically during regeneration. Radiation lesions not only appear during the process of regeneration but also disappear, and normal tissue is restored. The varying ability of tissues to repair radiation lesions is due to their inherent activity of physiological regeneration and is determined by correlation between the sensitivity of the tissues and changes in the strength of the dose of irradiation; this conclusion is confirmed by a number of facts but cannot yet be considered completely proved. (CCT abstract)

Zyuzin, I. K. and Krasnova, A. I.
THE EFFECT OF SMALL DOSES OF RADIOACTIVE PHOSPHORUS ON THE NITROGEN METABOLISM, HEMOPOIESIS AND THE FUNCTION OF THE CARDIOVASCULAR SYSTEM. 17 Mar 59, 3p. (2 figs omitted). JPRS:1327-N.
Order from OTS $0.50 59-13275

Trans. of Vestnik Rentgenologii i Radiologii (USSR) 1958, v. 33, no. 3, p. 75-76.

Changes in the nitrogen metabolism in the cerebrum of rats and in the blood of epileptic patients, as well as the functional changes in the cardiovascular system and in the hematopoiesis of these patients under the influence of small doses of radioactive phosphorus (P^{32}) were studied. The isotope was injected into the animals intraperitoneally calculating two to three microcuries per 100 grams of weight of the animal. The investigations of the nitrogenous metabolism and the proteolysis of brain tissue (the cortex and subcortical structures separately) of the animals was accomplished 70 to 80 minutes and 24 hours after the injection of the radioactive phosphorus.

Surgery

Kapichnikov, M. M. and Chepov, P. M.
ALL-UNION CONFERENCE ON THE PROBLEM OF TISSUE INCOMPATIBILITY AND TRANSPLANTATION OF ORGANS AND TISSUES (NO. 1). 30 Apr 59, 9p. JPRS: 695-D.
Order from OTS $0.50 59-11537

Trans. of Akademiya Meditsinskikh Nauk SSSR. Vestnik, 1958 [v. 13] no. 8, p. 79-83.

Mayskiy, I. N. and Zotikova, Ye. A.
CONFERENCE OF THE CZECHOSLOVAKIAN ACADEMY OF SCIENCES ON THE PROBLEM OF ORGAN AND TISSUE TRANSPLANTATION. 17 Apr 59, 5p. JPRS: 664-D.
Order from OTS $0.50 59-11516

Trans. of Akademiya Meditsinskikh Nauk SSSR. Vestnik, 1958, v. 13, no. 3, p. 60-62.

Zoology

REFERATIVNYY ZHURNAL. BIOLOGIYA (USSR) 1958, NO. 5 (Soviet Abstracts. Biology). 2 Mar 59, 1v. JPRS: 1309-N.
Order from OTS $1.00 59-13256

Contents:
Section P. General and Special Zoology: Insects. Abstracts 20874-21146

Complete translations of those entries which were originally published in the Sino-Soviet bloc and in Yugoslavia.

REFERATIVNYY ZHURNAL. BIOLOGIYA (USSR) 1958, NO. 6, (Soviet Abstracts. Biology). 4 Mar 59, 1v. JPRS: 1317-N.
Order from OTS $1.00 59-13265

Contents:
Section P. General and Special Zoology: Insects. Abstracts 25567-25833

Complete translations of those entries which were originally published in the Sino-Soviet bloc and in Yugoslavia.

CHEMISTRY

AKADEMIYA NAUK SSSR. OTDELENIYE KHIMICHESKIKH NAUK. IZVESTIYA, 1958, NO. 9, P. 1025-1154 (News of the Academy of Sciences of the USSR, Department of Chemical Sciences). [1959] 1v. SOV-62-58-9-(1-26)/26.
Order from OTS $0.50, $6.00/year PB 141 055T-10

Consists of abstracts in English.

REFERATIVNYY ZHURNAL. KHIMIYA (USSR) 1958, NO. 8 (Soviet Abstracts. Chemistry). 25 Nov 58, 22p. JPRS(NY) rept. no. 971.
Order from OTS $1.00 59-11106

Contents:
Section E. Analytical Chemistry. Analysis of Inorganic Substances. Abstracts 24773-24842

Complete translations of those entries which were originally published in the Sino-Soviet bloc and in Yugoslavia, excluding the USSR.

REFERATIVNYY ZHURNAL. KHIMIYA (USSR) 1958, NO. 11 (Soviet Abstracts. Chemistry). 23 Jan 59, 1v. JPRS(NY)-1158.
Order from OTS $1.00 59-13076

Contents:
Section H. Chemical Technology. Abstracts 30405-31300

Complete translations of those entries which were originally published in the Sino-Soviet bloc and in Yugoslavia excluding the Soviet Union.

REFERATIVNYY ZHURNAL. KHIMIYA (USSR) 1958, NO. 11. (Soviet Abstracts. Chemistry). 28 Jan 59, 1v. JPRS(NY)-1189.
Order from OTS $1.00 59-13098

Contents:
Section H. Chemical Technology. Abstracts 36431-37351

Complete translations of those entries which were originally published in the Sino-Soviet bloc and in Yugoslavia excluding the Soviet Union.

REFERATIVNYY ZHURNAL. KHIMIYA (USSR) 1958, NO. 11. (Soviet Abstracts. Chemistry) 29 Jan 59 1v. JPRS(NY)-1197
Order from OTS $1.00 59-13109

Contents:
Section H. Chemical Technology. Abstracts 37425-37999

Complete translations of those entries which were originally published in the Sino-Soviet bloc and in Yugoslavia excluding the Soviet Union.

REFERATIVNYY ZHURNAL. KHIMIYA (USSR) 1958, NO. 12 (Soviet Abstracts. Chemistry). 8 Dec 58, 1v. JPRS(NY) rept. no. 986.
Order from OTS $1.00 59-11181

Contents:
Section H. Chemical Technology, Abstracts 39847 40299

Complete translations of those entries which were originally published in the Sino-Soviet bloc and in Yugoslavia excluding the Soviet Union.

REFERATIVNYY ZHURNAL. KHIMIYA (USSR) 1958, NO. 12 (Soviet Abstracts. Chemistry). 22 Dec 58, 1v. JPRS(NY)-990
Order from OTS $1.00 59-13025

Contents:
Section H. Chemical Technology. Cellulose and its derivatives. Abstracts 41805-41926X

Complete translations of those entries which were originally published in the Sino-Soviet bloc and in Yugoslavia excluding the Soviet Union.

REFERATIVNYY ZHURNAL. KHIMIYA (USSR) 1958, NO. 16 (Soviet Abstracts. Chemistry). 2 Feb 59, 1v. JPRS(NY)-1203
Order from OTS $1.00 59-13112

Contents:
Section H. Chemical Technology Abstracts 54221-55236

Complete translations of those entries which were originally published in the Sino-Soviet bloc and in Yugoslavia excluding the Soviet Union.

REFERATIVNYY ZHURNAL. KHIMIYA (USSR) 1958, NO. 16. (Soviet Abstracts. Chemistry). 6 Feb 59, 1v. JPRS(NY)-1230
Order from OTS $1.00 59-13132

Contents:
Section H. Chemical Technology Abstracts 55320-56307

Complete translations of those entries which were originally published in the Sino-Soviet bloc and in Yugoslavia excluding the Soviet Union.

REFERATIVNYY ZHURNAL. KHIMIYA (USSR) 1958 NO. 17 (Soviet Abstracts. Chemistry). 2 Feb 59, 74p. JPRS: 1205-N.
Order from OTS $1.00 59-13114

Contents:
Section E. Analytical Chemistry
Section G. Organic Chemistry

Complete translations of those entries which were originally published in the Sino-Soviet bloc and in Yugoslavia, excluding the USSR.

REFERATIVNYY ZHURNAL. KHIMIYA (USSR) 1958, NO. 18, Abstracts 62365-63320 (Soviet Abstracts. Chemistry). 20 Jan 59, 1v. JPRS(NY)-1152.
Order from OTS $1.00 59-13061

Contents:
Section H. Chemical Technology
Section I. Chemistry of High Molecular Substances

Complete translations of those entries which were originally published in the Sino-Soviet bloc and in Yugoslavia excluding the Soviet Union.

REFERATIVNYY ZHURNAL. KHIMIYA (USSR) 1958, NO. 18. (Soviet Abstracts. Chemistry). 27 Jan 59, 1v. JPRS(NY)-1177
Order from OTS $1.00 59-13087

Contents:
Section H. Chemical Technology. Abstracts 61173-62263

Complete translations of those entries which were originally published in the Sino-Soviet bloc and in Yugoslavia excluding the Soviet Union.

REFERATIVNYY ZHURNAL. KHIMIYA (USSR) 1958, NO. 21 (Soviet Abstracts. Chemistry). 4 Feb 59, 52p. JPRS: 1226-N.
Order from OTS $1.00 59-13126

Contents:
Section E. Analytical Chemistry

Section F. Laboratory Equipment
Section G. Organic Chemistry

Complete translations of those entries which were originally published in the Sino-Soviet bloc and in Yugoslavia, excluding the USSR.

REFERATIVNYY ZHURNAL. KHIMIYA (USSR) 1958, NO. 22, (Soviet Abstracts. Chemistry). 4 Feb 59, 1v. JPRS: 1220-N.
Order from OTS $1.00 59-13125

Contents:
Section C. Inorganic Chemistry
Section D. Cosmochemistry
Section E. Analytical Chemistry
Section F. Laboratory Equipment
Section G. Organic Chemistry

Complete translations of those entries which were originally published in the Sino-Soviet bloc and in Yugoslavia, excluding the USSR.

USPEKHI KHIMII (USSR) 1958, V. 27, NO. 2, P. 133-240 (Progress of Chemistry). [1959] [7]p. SOV-74-27-2-(1-5)/5.
Order from OTS $0.50, $6/6 issues PB 141 070T-9

Consists of abstracts in English.

*ZHURNAL OBSHCHEY KHIMII (USSR) 1958, V. 28, NO. 3, P. 569-844 (Journal of General Chemistry). [1959] 1v. SOV-79-28-3-(1-61)/61.
Order from OTS $1.40, $7.50/6 issues PB 141 075T-9

Consists of abstracts in English.

*ZHURNAL OBSHCHEY KHIMII (USSR) 1958, V. 28, NO. 5, P. 1125-1415 (Journal of General Chemistry). [1959] 1v. SOV-79-28-5-(1-69)/69.
Order from OTS $1.40, $7.50/6 issues PB 141 075T-8

Consists of abstracts in English.

*ZHURNAL OBSHCHEY KHIMII (USSR) 1958, V. 28, NO. 8, P. 2005-2307 (Journal of General Chemistry). [1959] 1v. SOV-79-28-8-(1-66)/66.
Order from OTS $1.40, $7.50/6 issues PB 141 075T-7

Consists of abstracts in English.

Emanuel', N. M.
IMPORTANT PROBLEMS OF HIGHER CHEMICAL TRAINING. 2 Mar 59, 14p. JPRS: L-665-N.
Order from OTS $0.50 59-13237

Trans. of Vestnik Vysshey Shkoly (USSR) 1958 [v. 16] no. 8, p. 11-19.

Kul'man, A. G.
THE ROLE OF ENGINEERING CHEMISTRY IS INCREASING. 2 Mar 59, 4p. 1 ref. JPRS: L-666-N.
Order from OTS $0.50 59-13238

Trans. of Vestnik Vysshey Shkoly (USSR) 1958 [v. 16] no. 8, p. 20-22.

Radvinskiy, M. B.
THE STUDY OF THE COURSE OF GENERAL CHEMISTRY MUST BE REDEVELOPED. 2 Mar 59, 6p. 1 ref. JPRS: L-667-N
Order from OTS $0.50 59-13239

Trans. of Vestnik Vysshey Shkoly (USSR) 1958 [v. 16] no. 8, p. 22-25.

Analytical Chemistry

Alimarin, I. P.
ADVANCES OF ANALYTICAL CHEMISTRY OVER 40 YEARS. [1959] 16p.
Order from ATS $19.90 ATS-58L30R

Trans. of Uspekhi Khim[ii] (USSR) 1957, v. 26, no. 11, p. 1343-1354.

Banyai, Eva and Erdey, Laszlo.
APPLICATION OF PRECIPITATE EXCHANGE REACTION IN ANALYTICAL CHEMISTRY I (Anwendung von Fällungsaustauschreaktionen in der Analytischen Chemie I). [1958] 13p., 7 refs. Tr57-70.
Order from SLA mi$2.40, ph$3.30 59-10656

Trans. of Acta Chimica (Hungary) [1955] v. 8, p. 383-394.

Precipitate exchange reaction of a poorly soluble salt of an oxidizing anion and an appropriate metal was used to determine anions. The equilibrium resulting between solid and liquid when silver chromate was mixed with water was shifted to the right by reducing concentration of silver ions. Adsorption phenomena deviations were insignificant for quantitative analytical purposes. Known products of individual precipitates permitted calculation of suitability of a given transformation for analytical purposes. A conversion quotient of the ratio of the final concentration of the anions set free from the exchanger to the initial concentration of the anion to be determined gave a numerical indication of percentage error of a reaction. Values of the conversion quotient of a chloride-silver chromate precipitation exchange reaction were determined and graphed. Different values resulted for different initial concentrations of chloride. Quotients varied between 99.98 to 103% as the molarity concentration of chloride varied, and those greater than 100% indicated that more chromate went

into solution than was bound with the chloride. Physical solubility of silver chromate was suppressed when the quotient was less or equal to 100%. Ionic strength, pH, and temperature determined solubility of a precipitate.

Chalov, N. V. and Volskaya, L. P.
DETERMINATION OF ETHYL ALCOHOL IN AQUEOUS SOLUTIONS AT LOW CONCENTRATION. [1959] [9] p. 8 refs.
Order from LC or SLA mi$1.80, ph$1.80 59-10287

Trans. of Zavodskaya Laboratoriya (USSR) 1946, v. 12, p. 286-291.

A new variation of the method for the determination of ethyl alcohol in aqueous solutions at low concentration, based on the reaction of W. Fischer and A. Schmidt, has been developed. In contrast to the methods which were developed earlier, based on this reaction, in this method not the formed ethyl nitrite is removed from the reaction vessel but the reaction mixture, in connection with which it becomes unnecessary to use in the analysis inert gases for blowing out ethyl nitrite, or use solvents for absorbing it. By using the described method one can determine ethyl nitrite in aqueous solutions at low concentrations, 0.025 - 0.005%, in the presence of considerable amounts of various organic substances, with an accuracy of ± 3% in 20 min. The described method was tried for the analysis of ethyl alcohol, but it can be used for the determination of all alcohols.

Coursier, J.
PREDICTION OF THE CURVES IN BIMETALLIC POTENTIOMETRIC DETERMINATIONS BY MEANS OF POLARIZATION CURVES (Prévision des Courbes de Dosage par Potentiometrie Bimetallique au Moyen des Courbes de Polarisation). [1958] [8]p. 7 refs.
Order from SLA mi$1.80, ph$1.80 59-10551

Trans. of Analytica Chimica Acta (Netherlands) 1954, v. 10 [no. 3] p. 265-272.

The potential difference between bimetallic electrodes immersed in an oxidation-reduction solution was examined on an electrode to trace the polarization curve. An electroactive substance was used. When the oxidized and reduced forms of the same system are electroactive, an unattackable electrode dipped into a solution containing the two forms indicates an equilibrium potential. If one of the forms is not electroactive, the electrode indicates a mixed potential which is a function of its physicochemical nature. 4 possible cases were studied: (1) the oxidized and reduced forms of the two systems are electroactive with respect to the electrodes, (2) the titrating system has only one electroactive form, (3) the titrated system has only one electroactive form, (4) the titrating and titrated systems have only one electroactive form. Knowledge of polarization curves permitted interpretation and prediction of the form of the curves obtained by bimetallic potentiometric determination.

Erdey, Laszlo and Banyai, Eva.
APPLICATION OF PRECIPITATE EXCHANGE REACTIONS IN ANALYTICAL CHEMISTRY. II. DETERMINATION OF CHLORIDE IONS (Anwendung von Fällungsaustauschreaktionen in der Analytischen Chemie II Bestimmung von Chloridionen). [1958] 17p. 7 refs. Tr57-77.
Order from SLA mi$2.40, ph$3.30 59-10652

Trans. of Acta Chimica (Hungary) [1955] v. 8, p. 295-408.

The relative value of silver chromate, silver oxalate, silver iodate, mercury iodate, and mercury oxalate, as exchangers in precipitate exchange reactions for determining the chloride content of biological fluids was investigated. The solubility of each exchanger was determined for calculation of the conversion quotients. The range of concentration and the pH values within which each of the chemicals could be used for analytical laboratory testing were calculated theoretically, and then verified experimentally. Details of the processes with equations for the reactions are given. Mercury iodate and silver iodate were found to be most suitable for the determination of chloride by exchange reactions, and they could be used in very weak chloride concentrations. Since they may be used in an acid solution, alkaline specimens need not be neutralized. Mercury iodate was more practical than silver iodate, because it could be used in the strongest acid solutions, and it is not sensitive to light. Silver chromate, silver oxalate, and mercury oxalate could be used only in the presence of a high concentration of chloride. For practical requirements of analyzing chloride, the precipitate exchangers were listed in the following order: Mercury iodate, silver iodate, mercury oxalate, silver chromate, and silver oxalate.

Faingol'd, S. G. and Popova, A. S.
THE DETERMINATION OF CHLORIDE AND THIOCYANATE IN COAL TAR. [1959] 5p. 3 refs.
Order from CCT $10.50 CCT-523TT

Trans. of Koks i Khimiya (USSR) 1957, no. 2, p. 47-48.

The method put forward by the UKhIN (Khar'kov Coal-Chemical Scientific Research Institute) for the preparation of tar for the determination of chloride and thiocyanate does not ensure complete extraction of the salts; the results obtained are considerably lower than the actual concentrations of these salts in the tar. The solution obtained for titration has an opalescent turbidity, which makes it very difficult to detect the endpoint in the titration. The method which is put forward for the preparation of tar for analysis ensures the complete extraction of the chloride and thiocyanate, eliminates the evaporation, and reduces the time required for the analysis from 3-3.5 hours to 1.5 hours. Filtration through charcoal decolorizes the solution and ensures accurate titration; if activated charcoal is not available, this operation may be omitted. The addition of a coagulating agent makes it possible to obtain a colorless solution and facilitates accurate titration. (CCT abstract)

Jankovits, L.
DETERMINATION OF SMALL AMOUNTS OF CALCIUM BY MEANS OF IODANYLIC HEMIETHER (Bestimmung Kleiner Calcium Mittels Jodanylsauren Hemitathers). [1958] [13]p. 9 refs. Tr57-84.
Order from SLA mi$2.40, ph$3.30 59-10655

Trans. of Acta Chimica (Hungary) 1956, v. 10, p. 99-110.

A test is recommended for the determination of calcium ions, based on the change in color of iodanylic hemiether when a few drops of a solution containing calcium ions are added. A neutral solution containing 0.4 to 2.0 mg Ca^{+2} is added to a 50 ml flask, qs'd to 30 ml by the addition of distilled H_2O, mixed with 10 ml of 0.3% solution of iodanylic hemiether sodium salt, stoppered, shaken and left for 4 hrs. After filling the flask with distilled H_2O and shaking it again, the contents are filtered through a dry ash-free filter and the crystal-clear filtrate is then colorimetrically measured by means of a Pulfrich photometer at wave length 530mμ, using distilled H_2O as a reference standard. The Ca^{+2} content is then calculated from a calibration curve. The determination should be carried out in neutral solutions (pH about 6.8 to 7) in order to avoid the precipitation of $CaCO_2$ in the alkaline region or the dissolving of iodanylic hemiether sodium salt in the acid region. Also magnesium ions, in concentrations of 0.1 less than that of the calcium ion present, causes a 1% error while magnesium ions in larger concentrations prevents the determination since the iodanylic hemiether sodium salt precipitation is blocked.

Franc, J.
THE CHROMATOGRAPHY OF AROMATIC ISOMERS. IX. SEPARATION OF SOME BENZENE MONO- AND TRICARBOXYLIC ACIDS BY PAPER CHROMATOGRAPHY. [1959] 7p.
Order from ATS $11.65 ATS-77L29G

Trans. of [Sbornik Chekhoslovatskykh Khimicheskykh Rabot] (Czechoslovakia) 1958, v. 23, p. 2018-2023.

Koblyanskiy, A. G.
APPLICATION OF CATION EXCHANGE IN MICROCRYSTALLOSCOPIC ANALYSIS. 17 Nov 58, 9p. 10 refs.
Order from LC or SLA mi$1.80, ph$1.80 AEC-tr-3481

Trans. of Akad[emiya] Nauk SSSR. Kom[issiya po] Anal[iticheskoy] Khim[ii]. Trudy, 1956, v. 7, p. 89-95.

A new method of micro-crystalloscopic detection of cations is proposed, based on introducing the cationite grains, subjected to ion detection, into a drop of the corresponding reagent. This method makes it possible to detect ions absorbed by the cationite from the solution, the concentration of which is 10 to 40 fold lower the limiting concentration for the corresponding micro-crystalloscopic reaction.

Koch, O. G.
CONTRIBUTIONS TO TRACE ANALYSIS. I. TRACE ANALYSIS OF HIGH PURITY ALUMINUM AND ALUMINUM COMPOUNDS (Beiträge zur Spurenanalyse. I. Zur Spurenanalyse von Reinstaluminium und Aluminiumverbindungen) tr. by J. W. Palmer. July 58 [11]p. 26 refs. Library Trans. 749.
Order from SLA mi$2.40, ph$3.30 59-10082

Trans. of Mikrochimica Acta (Austria) 1958, no. 1, p. 92-103.

A procedure is given for the spectrochemical analysis for traces in high purity Al and Al compounds. The trace elements in 1 g of high purity Al metal or the weight of Al compounds equivalent to 1 g of the metal were extracted at pH 3, 5, 7, and 9 by means of ammonium pyrrolidin dithiocarbamate, dithizone, and chloroform, and concentrated, and then determined spectrographically after the addition of beryllium as reference element. By the method described here, it is possible to determine the trace elements quantitatively, according to their spectroanalytical limits of detection in concentrations from 0.00001 to 0.001% and up. The possibility of sources of error is pointed out and means for their avoidance are given.

Korshun, M. O. and Sheveleva, N. S.
A RAPID METHOD FOR THE SIMULTANEOUS MICRODETERMINATION OF CARBON, HYDROGEN, HALIDES OR SULPHUR IN ORGANIC COMPOUNDS. [1959] [3]p. [illus. omitted] 3 refs.
Order from LC or SLA mi$1.80, ph$1.80 59-10731

Trans. of Akademiya Nauk SSSR. Doklady, 1948, v. 60, no. 1, p. 63-66.

Rapoport, B. M., Milovidova, N. V., and Chernyak, S.M.
ON CHEMICAL GROUP COMPOSITION OF KEROSENE-GAS-OIL FRACTIONS (O Gruppom Khimicheskom Sostave Kerosino-Gasoilevykh Fraktsii). [1958] [19]p. 11 refs. TR57-112.
Order from LC or SLA mi$2.40, ph$3.30 59-10665

Trans. of Khimiya i Tekhnologiya Topliv i Masel (USSR) 1957, no. 2, p. 3-11.

By means of a method of oxidation with potassium permanganate, the presence of alkane radicals in a side chain of aromatic monocyclic and bicyclic groups of hydrocarbons was established. As a result of oxidation, fatty acids, such as phthalic and naphthalene-bicarboxylic were obtained. The possibility has been established of using the chromatographic method for the determination of chemical group composition of kerosene and gas-oil fractions from products of second processing. In this case the content of methane-naphthenic hydrocarbons, the sum of the unsaturated aliphatic and cyclic hydrocarbons, the amount of aromatic monocyclic and bicyclic hydrocarbons, and the amount of aromatic hydrocarbons with an unsaturated side chain, as well as the amount of resins were determined.

Schildknecht, Hermann.
RING ZONE MELTING PROCESS FOR ORGANIC SUBSTANCES. [1958] 9p. 5 refs.
Order from SLA mi$1.80, ph$1.80 59-10945

Trans. of Zeitschrift für Naturforschung (West Germany) 1957, v. 12B, no. 1, p. 23-26.

A zone melting process is described, by means of which preferably organic substances can be investigated on a semimicro and micro scale. By circular arrangement of the cooling and heating units the compound placed in the ring-form boat can be zone-melted to the stationary state. The described apparatus makes it possible to operate below room temperature and, with the aid of a Geiger counter and a meter, to follow the path of a radioactively marked additive in an inactive carrier.

Schomburg, G.
ABOUT THE QUANTITATIVE INTERPRETATION OF FRACTOGRAMS OF DISTRIBUTION CHROMATOGRAPHY THERMAL CONDUCTIVITY METHOD. [1958] 20p. 10 refs.
Order from SLA mi$2.40, ph$3.30 59-10569

Trans. of Z[eitschrift fllr] Analyt[ische] Chemie (West Germany) 1958, v. 164 [no. 1] p. 147-158.

Gas calibration in chromatography, when a known volume of the sample to be analyzed is introduced, and where an internal standard is employed for calibrating peak height and peak area in the quantitative interpretation of a fractogram is discussed. The proportion between percent by weight and percent area share is rejected, and calibration measurements are used for analysis of more complicated substances. Apparatuses and methods of the peak and area determinations, and ways of controlling the results are described. Partial pressures of individual components are found by plotting calibration curves, analyzing the sample, comparing it with the sample at inlet pressure, determining the heights or areas of the individual peaks, and multiplying with the factors determined from the calibration curve. The sums of the partial pressures are used as a control to detect other constituents in a sample. Correction factors for other hydrocarbons are determined using benzene with peak area/mol=100. Dividing the factors by the molecular weight gives quotients which are constant with less variation than if the Hausdorff assumptions, in which all substances have equal factors, are employed. Tables and illustrations on the fractograms and analyses performed by these methods are included.

Semerano, Giovanni and Rao, Ignazio Shiva.
THE QUANTITATIVE MICROANALYSIS OF MIXTURES OF FUMARIC AND MALEIC ACIDS. [1958] [7]p. (2 figs. omitted) 12 refs.
Order from SLA mi$1.80, ph$1.80 59-10692

Trans. of Mikrochemie (Austria) 1937, v. 23, p. 9-16.

The polarographic method of Schwaer (Collection trav. Chim. Tchecoslovaquie 7: 326, 1935) was used for quantitative and qualitative analyses of mixtures of maleic and fumaric acids containing at times only traces of one of them. The polarographic method is based on the fact that the bivalent anions of these acids are reduced in a mercury-drop cathode at different potentials. Solutions of calcium maleate (and fumarate) or lithium fumarate (and maleate) were gradually added to electrically nonresistant solutions of ammonium or lithium chloride at 18°C. A galvanometer of sensitivity 5×10^{-7} amp/mm/m was used for drawing the current-tension curves. Reduction potentials were determined in the usual manner (Gazz. chim. ital. 62: 518, 1932). The intensity of the constant electric current was found to be exactly proportional to the concentration of the reducible organic substance. The determination of maleic acid in fumaric was more sensitive than that of fumaric in maleic. The method can be used to identify and determine fumaric and maleic acids in quantities as low as 0.01 γ, and for quantities greater than 1γ the quantitative determinations may be made with an accuracy greater than ± 1%.

Shabarin, S. K.
CONFERENCE ON THE ANALYSIS OF PRECIOUS METALS [no. 4] 26 Nov 58, 3p. JPRS/DC-L-1153.
Order from OTS $0.50 59-11330

Trans. of Izvestiya Vysshikh Uchebnykh Zavedeniy. [Tsvetnaya Metallurgiya] (USSR) 1958, no. 1, p. 183-184.

The conference was held in Sverdlovsk on May 20 to 23, 1957. Topics are noted of papers that were read on various methods of analysis. These included the spectral method of analysis, the use of polarography for the determination of certain platinum metals, the use of new reagents for the analysis of platinum metals, photo colorimetric methods of analysis, the electrometric method of determining silver in alloys, and the determination of the composition of binary alloys of platinum metals according to the thermoelectromotive force. The conference acknowledged that future work should be directed towards (1) improvement of the preliminary concentration of precious metals before their analysis, (2) electrolytic dissolving of precious metals and their alloys, and other methods of reducing precious metals into solution, (3) the development of radioactivation analysis, (4) research for new characteristic compounds, especially organic compounds, and for specific reactions of precious metals and elements associated with them, (5) application of the extraction and chromatographic methods in the analysis of precious metals with the use of complex compounds of these metals, (6) development of methods of approximate analysis of materials containing precious metals, (7) new methods of assaying and analyzing precious metals, especially methods allowing the testing of products and alloys without breaking their entireness, and (8) the development of mechanized methods of sampling materials containing precious metals.

Songina, O. A., Kemeleva, N. G., and Kozlovski, M. T.
USE OF ELECTROLYTICALLY GENERATED PERMANGANATE ION FOR COULOMETRIC

TITRATION. [1959] 7p. 8 refs.
Order from LC or SLA mi$1.80, ph$1.80 59-10262

Trans. of Zavodskaya Laboratoriya (USSR) 1957, v. 23 [no. 8] p. 896-900.

The possibility of coulometric titration of microgram amounts of iron by electrolytically generated permanganate-ions using an amperometric determination of the end point (KT) was studied.

Wurzschmitt, B[ernhard].
A NEW RAPID METHOD FOR THE DECOMPOSITION OF MICRO, SEMIMICRO AND MACRO SAMPLES USING ALKALI PEROXIDE IN A UNIVERSAL BOMB (Ein Neues Schnellaufschlussverfahren mit Alkaliperoxyd in einer Universalbombe fllr Mikro-, Halbmikro-, und Makroeinwaagen) tr. by B. E. C. Jenkins. July 58 [11]p. 6 refs. Library Trans. no. 754.
Order from SLA mi$2.40, ph$3.30 59-10073

Trans. of Mikrochemie (Austria) 1951, v. 36/37 [no. 2] p. 769-780.

In the method used up to now for oxydative decomposition with sodium peroxide in a metallic bomb, different types of bombs are necessary for micro, semimicro and macro samples. The bombs and accessory apparatus are very heavy and, due to their complicated structure, are very expensive to manufacture. For this reason a universal bomb was constructed. which is simple and cheap and can be used for micro, semi-micro and macro samples. The mixture used for the decomposition, consisting of the substance to be analysed, sodium nitrate, sugar and sodium peroxide (which produces too violent a reaction in about 3% of the cases, resulting in a lost analysis) has been replaced by a new method of ignition. In this method the bomb is filled, without mixing, with ethylene glycol, the substance to be analysed and sodium peroxide. The ethylene glycol and sodium peroxide (ignition mixture) ignite at 560C, i. e., when the bomb is relatively cold, and this ignites the substance to be analysed. In this way the combustion is less violent, time is saved and the bomb has a longer life.

Zaykovsky, F. V. and Gerkhardt, L. I.
PHOTOMETRIC DETERMINATION OF THORIUM WITH ARSENAZO IN THE PRESENCE OF ZIRCONIUM, TITANIUM AND RARE EARTHS. 25 Nov 58, 11p. (4 figs. omitted) 10 refs.
Order from LC or SLA mi$2.40, ph$3.30 AEC-tr-3485

Trans. of Zhur[nal] Anal[iticheskoy] Khimii (USSR) 1958, v. 13 [no. 3] p. 274-279.

The inhibiting effect of zirconium, titanium and the rare earth elements during a photometric determination of thorium with arsenazo was eliminated by tartaric acid. A method for determining thorium with arsenazo in the presence of the indicated elements was developed.

Zhukovitskiy, A. A., Turkel'taub, N. M. and Sokolov, V. A.
THE THEORY OF CHROMATOTHERMOGRAPHY. [1958] 6p. 1 ref.
Order from LC or SLA mi$1.80, ph$1.80 59-10644

Trans. of Akademiya Nauk SSSR. Doklady. 1953, v. 88 [no. 5] p. 859-862.

Chromatothermography is a new method for the separation of complex mixtures (Akademiya Nauk SSSR 77: 435, 1951). The dynamics of the process are described. Results show that the adsorbate moves along the layer of adsorbent with the rate of the motion of the oven. When the layer moves, a narrowing of the band of the adsorbate takes place which is along a mathematical line for linear isotherms and along an asymptotical distribution in the case of curvilinear isotherms.

Inorganic Chemistry

ZHURNAL NEORGANICHESKOY KHIMII (USSR) 1958, V. 3, NO. 3, P. 554-839 (Journal of Inorganic Chemistry). [1958] 1v. [SOV]-78-3-3-(1-47)/47.
Order from OTS $0.80, $4.50/6 issues PB 141 074T-4

Consists of abstracts in English.

Babko, A. K. and Marchenko, P. V.
ÉTUDE DE L'INFLUENCE DES IONS BROME ET IODE SUR LE PROCESSUS DE RÉDUCTION DE L'ARSENIC JUSQU'A L'ÉTAT ÉLÉMENTARIE
[Study of the Effect of Bromine and Iodine Ions on the Reduction Processes of Arsenic to the Elementary State] tr. by M. Schkaff. 7 Jan 59 [11]p. 10 refs. Trans. no. R 278 (text in French).
Order from LC or SLA mi$2.40, ph$3.30 CEA-tr-R278

Trans. in French of Ukrainskiy Khimicheskiy Zhurnal (USSR) 1956, v. 22, no. 5, p. 665-669.

On a étudié l'influence des iodures et des bromures sur le processus de réduction de l'arsenic trivalent à l'état élémentaire. On a trouvé que ces additions, de même que l'acide chlorhydrique, accèlèrent la réduction, indépendamment de la nature de l'agent réducteur. On a étudié les conditions optima de réduction de l'arsenic trivalent à l'état d'élément en présence des substances ajoutées. Il a été trouvé que l'introduction de 0,05 - 0,5 équival. g/litre d'iodure de potassium permet d'isoler quantitativement l'arsenic, à partir de solutions, à une concentration plus basse de l'acide chlorhydrique et avec un excès moindre d'agent réducteur. La réduction dans ces conditions des composés de l'arsenic trivalent par l'hypophosphite de calcium a lieu dans l'acide chlorhydrique 3N; si l'on emploie, comme agent réducteur, du bichlorure d'étain, on peut isoler l'arsenic dans un milieu d'acide chlorydrique 5N. On a véririé l'influence de ces conditions en employant des traceurs.

Baroni, A[lessandro].
COBALT OXIDES. [1959] 10p. (1 table omitted) 15 refs. NP-tr-149.
Order from SLA mi$1.80, ph$1.80 59-10545

Trans. in manuscript form of Gazzette Chim[ica] Ital[iana] (Italy) 1940 [v. 70] p. 483-490.

Becker, E. W., Hübener, R., and Kessler, R.
THE ENRICHMENT OF HEAVY WATER BY HIGH-PRESSURE EXCHANGE BETWEEN HYDROGEN AND AN AQUEOUS CATALYST SUSPENSION, tr. by S. Asher. [1958] [26]p. 20 refs. AERE Lib/Trans 799.
Order from SLA mi$2.70, ph$4.80 59-10046

Trans. of Chemie-Ingenieur-Technik (West Germany) 1958, v. 30, no. 5, p. 288-[292].

Chemical exchange between hydrogen and water is especially suitable for the technical production of heavy water because of its relatively high isotope displacement and the favourable chemical properties of the reacting species. The economics of a procedure using this system depends largely on the properties of the catalyst required for the isotopic exchange. It is shown that the high-pressure exchange between hydrogen and an aqueous catalyst suspension in hot/cold columns has economic advantages over the hitherto accepted procedure for the enrichment of heavy water.

Fricke, Robert, Niermann, Fritz, and Feichtner, Charlotte.
THE PRIMARY PARTICLE DIMENSION AND SECONDARY STRUCTURE AS WELL AS THE CALORIC CONTENT OF VARIOUS ACTIVE y-ALUMINIUM OXIDES. [1958] 11p. (2 figs. 4 tables omitted) 1 ref.
Order from SLA mi$2.40, ph$3.30 59-10061

Trans. of Chem[ische] Berichte (West Germany) 1937, v. 70 [no. 11] p. 2318-2330.

Varyingly active conditions of y-Al_2O_3, prepared by heating hot precipitated aluminium hydroxide (very finely particled boehmite) to temperatures between 500° and 800°, were examined for their solution heat. Differences in caloric content resulted of up to almost 4 kcal per gram/molecule of Al_2O_3. Differences in the grid constants and differences in the grid formation (grid disturbances) could be excluded roentgenographically as significant cause of the found differences in caloric content. On the other hand, very small primary particle dimensions were found in all preparations, which decreased with increasing calorie content. The roentgen findings correspond, therefore, extensively to those obtained earlier with y-Fe_2O_3. When the calorie content of the preparations is represented as dependent on the primary particle dimension or on the molecular surface dimension, inversely proportionate to the former, calculated under the assumption of cubiform particles a straight line is obtained. The primary particle dimension is accordingly here what determines the calorie content. From the inclination of the straight line a total surface energy of 560 erg/sq cm results for y-Al_2O_3. This figure has the significance of a lower limit. Furthermore, the preparations were examined by the EmV = method of Otto Hahn using radiothorium. The highest emanation power (EmV = 58%) was obtained here for the initial hydroxide. For the oxides prepared from it the EmV was smaller, the higher and the longer the heating. The molecular "surfaces" calculated from the EmV values were smaller by more than a tenth power than those calculated from the primary particle dimensions and had no clear-cut connection with the caloric content of the preparations. For our preparations, in which the mean primary particle dimensions were all considerably below the length of the recoil path of the short-lived thoron Hwz 54.5 sec., the figures obtained for the "surfaces", calculated from the EmV, were those which gave an overall criterion for the portion of the total preparation surface which was relatively quickly accessible to a gas with an emanation of comparably heavy and large molecules or from which such a gas could escape relatively quickly.

Makarov, E. S.
THE DUALITY OF THE CHEMICAL NATURE OF THE ACTINIDES [O Dvoystvennosti Khimicheskoy Prirody Aktinidov]. [31 Oct 58] 20p. (1 fig. omitted) 14 refs.
Order from RIS $55.00 RIS R-725

Trans. of [Zhurnal Neorganicheskoy Khimii] (USSR) 1958, v. 3, no. 5 [p. 1079-1088].

Experimental non-Soviet work on the crystallochemical analogy between the compounds of the actinides on the one hand and the compounds of the elements of the IVa, Va, VIa groups and the rare earths on the other is described. A profound crystallochemical similarity exists between these groups. The oxides of ThO_2, UO_2, and CeO_2 not only have similar chemical properties, but also the structure of these compounds is similar to that of the oxides of the actinides. Furthermore the oxides have chemical properties similar to those of the oxides of the elements of the IVa, Va, VIa groups. In the groups of the nitrides, carbides, and borides, the isostructural analogy between the compounds of the actinides, lanthanides and the elements of the group IVa, Va, VIa is continued. An isostructural analogy is also to be found in the intermetallic compounds. The actinide elements with the elements of the IVa, Va, VIa groups enter continuous solid solutions with cubic centered lattice. A similar isomorphism does not exist in the systems of the actinides and lanthanides. The numerous isomorphisms between the compounds of the actinides and the IVa, Va and VIa groups on one hand and the similarity of the actinides to the lanthanides indicate that the actinides can not be denominated as transuranian elements, as their chemical nature shows durabili

Starik, I. E. and Lambert, M. S.
STATE OF MICROELEMENTS IN AQUEOUS SOLUTIONS (Sostoyaniye Mikrokolichestv Prometiya v Vodnykh Rastvorakh). 1 Dec 58, 10p. 6 refs. (includes foreign text)
Order from LC or SLA mi$1.80, ph$1.80 AEC-tr-3499

Trans. of Zhurnal Neorganicheskoy Khimii (USSR) 1958, v. 3, no. 1, p. 136-138.

The adsorption of promethium on quartz glass in concentrations of the order of 10^{-10} mol was investigated as a function of the solution pH. The presence in these solutions of promethium in the colloid state was shown by ultra-filtration. A clear adsorption maxima of promethium on glass at a pH of 6.2 was established.

Wiberg, Von Egon, and Simmler, Walter.
A MICA-LIKE MODIFICATION OF SILICON OXYHYDRIDE $[HSiO_{1.5}]x$ (Uber eine Glimmer-Form des Siliciumoxyhydrids $[HSiO_{1.5}]x$). [1958] [20]p. 7 refs. (Foreign text included) Trans. no. 3138.
Order from SLA mi$2.40, ph$3.30 59-10823

Trans. of Zeitschrift für Anorganische Chemie (East Germany) 1956, v. 283, no. 1/6, p. 401-413.

When trichlorosilane $HSiCl_3$ is hydrolyzed in a dilute ether solution with a quantity of water calculated with the aid of the equation, $HSiCl_3 + 1.5H_2O \longrightarrow HSiO_{1.5} + 3HCl$ a clear solution is obtained. Concentration of this solution leads to a separation of a high-molecular silicon oxyhydride $[HSiO_{1.5}]x$ in the form of colorless mica-like flakes. The properties, structure, thermal degradation and mechanism of formation of this modification are discussed.

Organic Chemistry

NEW CATALYST COMBINATIONS FOR POLYMERIZATION OF ORGANIC COMPOUNDS WITH TERMINAL OR INNER DOUBLE BONDS. [28 Nov 58] 9p.
Order from RIS $19.00 RIS rept. 61003

Trans. of German patent application D 19 857 (39c, 25/01) DAS 1 024 237, by Deutsche Gold- und Silber-Scheideanstalt, Frankfurt, filed 22 Feb 55, pub. 13 Feb 58.

The effectiveness of redox system catalysts for polymerizing organic compounds with double bonds at the end or middle of the molecule was improved when betaine compounds obtained by cleavage of the betaine ring were added. These betaine compounds have the following general formula:

$$[R'' - \underset{\displaystyle R'''}{\overset{\displaystyle R'}{\overset{|}{\underset{|}{N}}}} - (CH_2)_n - CO - O - R''''']^{+} \cdot X^{-}$$

Here R', R'', and R''' represent an aliphatic, aromatic, hydroaromatic or heterocyclic radical each R'''' represents hydrogen or an aliphatic, aromatic, hydroaromatic or heterocyclic radical, and X an acid radical. Soluble betaine derivatives, especially trialkylaminoacetic acid ester chlorides, were suitable for this purpose. Addition of small amounts of heavy metal compounds and/or monohydric or polyhydric aliphatic alcohols and water also accelerated polymerization. Bulk polymerization was carried out with a mixture or solution which contained one liquid monomeric polymerizable compound and at least one polymeric compound. For dental use, the peroxide and a derivative of an α-hydroxysulfone are mixed with the powdery component, and the betaine derivative is dissolved in the monomer.

PROCESS FOR CONTINUOUS PRODUCTION OF POLYPROPYLENE AND OTHER POLYOLEFINS. [24 Oct 58] 12p.
Order from RIS $31.00 RIS-96946

Trans. of Belgian patent 562 300, 12 Nov 57, by Ruhrchemie A. G., Oberhausen-Holten. Priority: German patent applications R 20 025 filed 16 Nov 56, R20 035 filed 19 Nov 56, and 20 054 filed 21 Nov 56.

Good yields of polypropylene were obtained by a continuous process for polymerizing gaseous olefins bearing at least 3 carbon atoms per molecule, such as propylene or butylene, or mixtures of these gases, under pressures below 100 kg/cm^2 at temperatures ranging up to about 100° C. The catalysts were composed of mixtures of aluminum or other organometallic derivatives of Group I to III elements, with metals of Groups IVB to VIII, preferably Ti derivatives. The polymerization promoters were separately conveyed in 2 or more streams, mixed either just before or in the reaction chamber, and in some cases, heated nearly to polymerization temperature. The components of the substances acting as polymerization promoters were introduced in a gaseous or a finely divided state, either separately or together with the olefin mixture. The active catalysts were added to one gas stream, and the second partial gas stream was similarly saturated with liquid tetravalent titanium compounds or with solid catalyst materials in the form of fumes, dust, or mist. In one variation, the promoter constituents were separately introduced into the reaction chamber in suspensions or solutions. One of the partial streams contained derivatives of Group I to III elements, and the other contained heavy metals or their derivatives of Group IVB to VIII. The polymerizer was charged with an additional stream of gas or liquid containing no catalyst. Before entering the reactor, the stream was mixed with another gas stream containing the catalyst.

PROCESS FOR PRODUCING POLYESTERS OF CARBONIC ACID. [13 Mar 59] 5p.
Order from RIS $7.00 Rept. 61044

Trans. of German patent application B 44 268 (39c, 16) DAS 1 044 406, by Badische Anilin- & Soda-Fabrik A. G., Ludwigshafen, filed 11 Apr 57, pub. 20 Nov 58.

Polyesters of carbonic acid with a regular structure having alternating aromatic and aliphatic groups may be obtained by reacting bis-chlorocarbonic esters of glycols with dihydroxyaryl compounds in an aqueous alkaline medium. An inert organic solvent such as xylene, chloroform, or other hydrocarbons containing halogens is added. The two components are allowed to interact until a viscous polycondensate is formed. Tertiary amines or their quaternary salts accelerate the reaction, which proceeds at room temperature. The products are thermoplastic and may be processed either directly or from solutions, into films, sheets,

or fibers. In two examples, the products have a k-value of 65 and 59. Suitable bis-chlorocarvonates are the glycols; 1,2-ethylene glycol, 1,4-butanediol, 1,6-heanediol, 2,5-hexanediol, bis-(hydroxyaryl)-dimethylmethane, or 1,4-hexenediol. Hydroquinone, resorcinol or pyrocatechol may be used as the dihydroxyaryl compounds, and bis-(hydroxy-aryl) alkanes may be used, such as (4,4'-dihydroxydiphenyl)-methane or 1,1-(4,4'-dihydroxydiphenyl)-cyclohexane.

PROCESS FOR PRODUCING POLYETHYLENE TEREPHTHALATE. [13 Mar 59] 4p.
Order from RIS $5.75 Rept. 61043

Trans. of German patent application F 18 054 (39c, 16) DAS 1 045 100, by Farbwerke Hoechst A. G., Frankfurt, filed 28 July 55, pub. 27 Nov 58.

Three catalysts are used to obtain a high degree of condensation in a reduced reaction time. The 3 catalysts, zinc acetate, cadmium acetate, and antimony trioxide are used in sequence, and are so effective that a polyethylene with excellent mechanical properties is produced without agitating the reaction material. In the first phase, transesterification of dimethyl terephthalate with ethylene glycol, 0.008 to 0.08% of zinc acetate is added. Then 0.02 to 0.08% of cadmium acetate is introduced as a polycondensation accelerator to the precondensate which has a k-value below 35. The third catalyst, antimony trioxide, is added to obtain the polyester with unusual mechanical properties. Two experiments are described in which the resulting polyethylene terephthalate has a k-value of about 54.

PROCESS FOR PRODUCING POLYOLEFINS OF PREDETERMINED AVERAGE MOLECULAR WEIGHT. [16 Jan 59] 9p.
Order from RIS $19.00 RIS-96960

Trans. of Belgian patent 559 842, 5 Aug 57, by Bergwerksgesellschaft Hibernia A. G., Herne. Priority: patent application B 41 304 IVb/39c, Germany 6 Aug 56.

The process is based on the discovery that the average mol. wt. of the polymer and the rate of polymerization depend on the nature of the solvent used to dilute the catalyst. The solvent used for the polymerization has no appreciable effect on the reaction. Using hydrogenated alkylbenzenes such as hydrocumene, or aliphatic hydrocarbons such as hydrocumene, or aliphatic hydrocarbons such as light benzene or aliphatine, a macromolecular product is obtained at a higher rate of polymerization. When olefins containing more than 2 carbon atoms are polymerized, a larger crystalline product results. If cyclohexane is used instead, the rate of polymerization falls, the mol. wt. of the end product is much lower, and its amorphous component may be larger. With the catalyst composition remaining unchanged, e.g., 1 part $TiCl_4$ to 2 parts diethylaluminum monochloride, any desired mol. wt. between 150,000 and 800,000 can be obtained by diluting the catalyst with the proper solvent. Catalyst composition and temperature are not critical, since adjustments can be made when adding the solvent to the catalyst. In some examples, the catalyst was prepared at higher temperatures. A total of 6 examples are used to illustrate the invention.

TWO-PHASE REACTION GIVING HIGH YIELDS OF TETRAARYLTIN. [20 Mar 59] 4p.
Order from RIS $5.00 Rept. 97003

Trans. of German patent application F 22 163 DAS 1 027 669, by Farbwerke Hoechst A. G., Frankfurt, filed 18 Jan 57, pub. 10 Apr 58.

A process for producing tetraaryltin from tin tetrahalide and arylsodium is described. The reaction is based on the discovery that an aryltin halide, such as diaryltin dihalide, triaryltin monohalide, or monoaryltin trihalide reacts more easily with arylsodium than does tin tetrahalide. In the first step, 1 mole of tetraaryltin is disproportionated with 1 mole of tin tetrahalide, at a temperature of 220° to 230° C., to form an aryltin halide. The disproportionation product is then reacted with an aryl alkali metal, such as arylsodium, to give tetraaryltin. In the second phase the reaction takes place at temperatures between -20° to +80°C, but preferably between +4° to +5°C. A 20 to 25% excess of the aryl alkali metal is used, and an inert solvent is added.

Bosoni, Achille
POLYPROPYLENE DISPERSIONS. [13 Mar 59] 7p.
Order from RIS $19.00 RIS-96980

Trans. of Belgian patent 561 459, 8 Oct 57, by Montecatini, Societa Generale per l'Industria Mineraria e Chimica, Milan and Karl Ziegler, Mulheim. Priority: Italian patent application 14 826 filed 9 Oct 56 by Montecatini.

Three methods are given for preparing an aqueous polypropylene dispersion having a crystalline polymer content of 50-100% by wt. The methods comprise (1) dispersing finely divided polypropylene with a 0.1-0.20M particle size and a crystalline polymer content of 50-100% by wt. in water with or without an emulsifier; (2) grinding the polypropylene in the presence of an oil, dissolving it in a propylene solvent, emulsifying the resulting substance in water, then evaporating off the solvent; and (3) preparing the solution in a water miscible organic solvent and precipitating the polypropylene by adding water, after which the solvent is separated. A stable dispersion results which may be used for coating or impregnating paper, cables, yarns, fabrics, asbestos, and metals, such as wires, sheets, and foils. Good results are reported in using the dispersions as laminating adhesives. The product may contain a filler, pigment, or plasticizer, and may be extruded into a filament or film. A 100% concentration is easily and quickly achieved, and transportation and storage costs are reduced.

Dashkevich, L. B.
SYNTHÈSE DE LA SPASMOLYTINE MARQUÉE PAR DU CARBONE RADIOACTIF ^{14}C DANS LE GROUPE

CARBONYLE [Synthesis of Labeled Spasmolytine by Radioactive Carbon C^{14} in the Carbonyl Group] tr. by Mme. Masour. 16 Dec 58 [5]p. 3 refs. Trans. no. R574 (text in French).
Order from LC or SLA mi$1.80, ph$1.80 CEA-tr-R574

Trans. in French of [Zhurnal Obshchey] Khimii (USSR) 1957, v. 27, no. 3. p. 724-726.

Dashkevich, L. B.
SYNTHESE DU DIETHYLAMINOETHANOL MARQUE PAR LE CARBONE RADIOACTIF ^{14}C DANS UN DES GROUPES ETHYLIQUES [Synthesis of Diethylaminoethanol Labeled with C^{14} in one of the Ethyl Groups] tr. by B. de Trezvinsky. 21 Nov 58, [4]p. 2 refs. Trans. no. R 555 (text in French).
Order from LC or SLA mi$1.80, ph$1.80 CEA-tr-R555

Trans. in French of [Zhurnal Obshchey] Khimii (USSR) 1957, v. 27, no. 10, p. 2874-2875.

Farina, M. and Ragazzini, M.
POLYMERIZATION OF ETHYLENE WITH SOLUBLE CATALYSTS. [1959] [11]p. 5 refs.
Order from SLA mi$2.40, ph$3.30 59-10170

Trans. of la Chimica e l'Industria (Italy) 1958, v. 40 [no. 10] p. 816-819.

A study has been made of ethylene polymerization to high, linear polymers by means of hydrocarbon-soluble catalysts made from transition metal compounds and metalorganic compounds, specifically, titanium tetraalcoholates and aluminum trialkyls. In previous work it has been found that such catalytic systems led chiefly to the dimerization of ethylene to butene. The reaction type is strictly a function of experimental conditions, particularly the Al/Ti ratio and the method of preparing the catalysts. With proper choice of conditions the results may range from pure dimerization to a true polymerization yielding products of high molecular weight. Study of the reaction, carried out under the most general conditions, i. e. yielding both butene and polyethylene, shows that the two processes are not simultaneous, but proceed quite separately for the most part.

Fischer, E. O. and Palm, C.
AROMATIC COMPLEXES OF METALS. XVII [1]. CYCLOPENTADIENYL METAL CARBONYLS OF NICKEL. [1959] 9p.
Order from ATS $11.30 ATS-03L30G

Trans. of Chem[ische] Ber[ichte] (West Germany) 1958, v. 91, p. 1725-1731.

Grewe, Rudolf, Heinke, Arno, and Sommer, Christian.
THE PREPARATION AND CONFIGURATION OF SOME 3, 4-DISUBSTITUTED CYCLOHEXANE CARBOXYLIC ACIDS (Darstellung und Konfiguration einiger 3, 4-disubstituierter Cyclohexancarbonsäuren). [1959] 22p. 25 refs.
Order from SLA mi$2.70, ph$4.80 59-10526

Trans. of Chemische Berichte (West Germany) 1956, v. 89 [no. 8] p. 1978-1988.

Various cyclohexane carboxylic acids are described, which have hydroxyl groups or halogen atoms in positions 3 and 4. In this class of substances the bromolactones or iodolactones are especially easy to prepare.

Guzzetta, Giuseppe and Ercoli, Ezio.
POLY-α-BUTENE FILM AND SHEETING. [13 Mar 59] 7p.
Order from RIS $15.25 Rept. 96978

Trans. of Belgian patent 561 458, 8 Oct 57, by Montecatini, Societa Generale per l'Industria Mineraria e Chimica, Milan and Karl Ziegler, Mülheim. Priority: Italian patent application 14 825 filed by Montecatini 9 Oct 56.

A process for making sheet or ribbon from a thermoplastic mixture of linear, crystalline poly-α-butene and linear, amorphous poly-α-butene is described. The amount of amorphous polymer is between 10 and 60%, and the plasticity of the compound increases in direct proportion to the percentage of amorphous polymer. A film of predetermined flexibility may be obtained by direct polymerization, but the preferred method is to measure the proper proportions and mix them on a roll mill at a temperature of about 160° C. Stretching the sheet enhances its quality. The products may be used alone or bonded to fabrics to make them resistant to moisture, fats, oils, or water. They can be embossed and used as artificial leather, and will take inert mineral fillers, colorants, or antioxidants. They are soft and flexible, have a low brittle point, good chemical stability, and resistance to chemical agents, are washable with common detergents, and can be sterilized at 100° to 110° C.

Hartmann, Hermann and Svendsen, Moj Bonnevie.
THE EFFECT OF METHYL GROUPS UPON THE IONIZATION POTENTIAL OF AROMATIC AND UNSATURATED COMPOUNDS (Der Einflub von Methylgruppen auf die Ionisierungsspannung Aromatischer und Ungesattigter Verbindungen). [1958] [15]p. 11 refs. Tr57-188.
Order from SLA mi$2.40, ph$3.30 59-10666

Trans. of Zeit[schrift] für Physikalische Chemie (West Germany) 1957, v. 11, p. 16-29.

The ionization energies of toluene, o-xylene, m-xylene, p-xylene, mesitylene, durol, bromobenzene, bromodurol, aniline, p-toluidine, mesidine, and durolamine, were measured by means of an apparatus described by Hartmann and Grunert (Z. physik Chem. 199: 259, 1952). The differences between the ionization energies of the methylated ethylenes (measured by Honig, J. Chem. Phys. 16: 105, 1948) and methylated benzenes on one hand, and the non-methylated basic substances on the other, may be explained quantitatively by the concept of a simple electrostatic induction. In p-xylene and p-toluidine the stabilization of ions by mesomerism plays a part.

Herrmann, Willy O. and Haehnel, Wolfram.
THE POLYMERIC VINYL ALCOHOL. [1958] 6p.
Order from SLA mi$1.80, ph$1.80 59-10691

Trans. of [Chemische] Berichte (West Germany) 1927, v. 60, July, p. 1658-[1663].

Hilgetag, G., Schramm, G., and Teichmann, H.
THE BEHAVIOR OF ESTERS OF THIONOPHOSPHORIC ACID AT ELEVATED TEMPERATURES. 9 Dec 58 [4]p. 6 refs.
Order from SLA mi$1.80, ph$1.80 59-10490

Trans. of Angew[andte] Chem[ie] (West Germany) 1957, v. 69 [no. 6] p. 205.

Conversion of thionophosphates to the isomeric thiolphosphates at elevated temperatures was achieved in high yields. Monoalkyl diarylthionophosphates produced near quantitative isomerizations, whereas dimethyl aryl thionophosphates produced syrupy reaction products of various trimethylsulfonium and condensed phosphates, rather than isomeric thiol esters. Dimethyl phenyl thionophosphate heated for 14 hours verified structures of these products by synthesis. The decrease of thiono sulfur with time at various reaction temperatures was graphed, and the formation of dimethyl sulfide by condensation reaction of the thiolphosphates acted as an accelerator. Isomerization in the diaryl methyl thionophosphate was also accelerated by dimethyl sulfide, or by other nucleophilic reagents which included dimethylaniline, thiourea and sodium O, O-diphenyl thiophosphate. Uncatalyzed true isomerization in the thionophosphate group was considered a crypto-ionic reaction, and when accelerated by the above additives, it was considered an ionogenic chain reaction.

Imoto, Minoru and Kinoshita, Masayoshi.
POLYMERIZATION OF VINYL MONOMERS WITH ALFIN CATALYSTS. Rept. no. 29 on Studies on Vinyl Polymerization. [1958] 11p. 11 refs.
Order from SLA mi$2.40, ph$3.30 59-10493

Trans. of Kogyo Kagaku Zasshi (Japan) 1958, v. 61, no. 4, p. 452-454.

Alfin catalysts were very active as polymerization catalysts for butadiene, isoprene, and styrene, and gave polymers of very large molecular weights at high yields. Studies conducted showed that several types of vinyl monomers would polymerize by alfin catalysts.

Natta, G., Mazzanti, G., and others.
ISOTACTIC POLYMERS OF VINYL MONOMERS CONTAINING SILICON. [1959] [8]p. 18 refs.
Order from SLA mi$1.80, ph$1.80 59-10172

Trans. of la Chimica e l'Industria (Italy) 1958, v. 40 [no. 10] p. 813-815.

Polymerization of monomers containing silicon and vinyl unsaturation yielded high molecular weight linear polymers. Amorphous, noncrystallizable fractions and highly crystalline fractions having isotactic structure were isolated from the crude product by solvent extraction. In addition, fractions of low crystallinity, made up of stereoblock macromolecules, were also isolated. The highly crystalline fractions had high melting points which, in certain polymers (for example, polytrimethylallylsilane), could exceed 350° C. The properties of the polymers, containing an atom of silicon per monomeric unit, were compared with those of polymers obtained from the corresponding hydrocarbon monomers.

Natta, G., Valvassori, A. and others.
COPOLYMERIZATION OF ETHYLENE WITH THE ALIPHATIC ALPHA OLEFINS. NOTE V. COPOLYMERIZATION OF ETHYLENE-PROPYLENE WITH CATALYSTS PREPARED FROM TITANIUM HALIDES. [1959] 25p. 7 refs.
Order from SLA mi$2.70, ph$4.80 59-15120

Trans. of La Chim[ica] e l'Ind[ustria] (Italy) 1958, v. 40, no. 11, p. 896-905.
Another translation is available from ATS $18.40 as ATS-63K28I, 17p.

A description is given of the copolymerization of ethylene-propylene with catalysts derived from trialkyl aluminum and different titanium chlorides. Each titanium halide is examined for its influence on the composition of the copolymers and conditions are cited under which the reaction product obtained in the presence of aluminum trihexyl will consist of linear, amorphous high polymers free of homopolymers or crystalline copolymers. Based on results of a series of experiments with different monomer mixture compositions, the values indicated by the reactivity ratios of the two monomers copolymerized in the presence of catalysts prepared respectively from $TiCl_4$, $TiCl_3$ (alpha modification) and crystalline $TiCl_2$ are determined.

Nesmeyanov, A. N., Silayev, A. V. and Fedoseyev, V. M.
PRÉPARATION DU 2, 3-DIMERCAPTOPROPANOL CONTENANT DU SOUFRE RADIOACTIF [Preparation of 2, 3-Dimercaptopropanol Containing Radioactive Sulfur] tr. by Mme. Masour. 21 Feb 58, [11]p. 5 refs. Trans. no. R 584 (text in French).
Order from LC or SLA mi$2.40, ph$3.30
CEA-tr-R584

Trans. in French of [Zhurnal Obshchey] Khimii (USSR) 1957, v. 27, no. 5, p. 1280-1282.

Petrov, A. D., Mironov, V. F. and Chernyshev, E. A.
SYNTHESIS AND PROPERTIES OF SILICOHYDROCARBONS AND THEIR DERIVATIVES. [1959] 111p. 403 refs.
Order from LC or SLA mi$6.00, ph$18.30 59-10685

Trans. of [Uspekhi Khimii] (USSR) 1957, v. 26, no. 3, p. 292-344.

Some generalizations are given on the studies made in recent years, and especially the material that has accumulated since the appearance of our first survey. (Prog. Chem. (USSR) 22; 337, 1953).

Schwebke, Wilhelm.
A VT-NOMOGRAM FOR DYNAMIC AND KINEMATIC VISCOSITY OF MINERAL OILS IN THE TEMPERATURE RANGE FROM 20°C TO 150°C (Ein VT-Nomogramm für die Dynamische und die Kinematische Viscositat von Mineralolen in Temperaturbereich 20°C bis 150°C). [1958] [14]p. 17 refs. Tr57-136.
Order from SLA mi$2.40, ph$3.30 59-10593

Trans. of Erdöl und Kohle (West Germany) 1957, v. 10, no. 2, p. 75-79.

Sergeyev, P. G., Bukreyeva, L. M., and Polkovnikova, A. G.
SYNTHESIS OF ALLYL ALCOHOL BY THE ISOMERIZATION OF PROPYLENE OXIDE. [1959] 8p. 9 refs.
Order from LC or SLA mi$1.80, ph$1.80 59-10177

Trans. of *Zh[urnal] Prik[ladnoy] Khim[ii] (USSR) 1958, v. 31, no. 9, p. 1415-1419.

An investigation was made on the production of allyl alcohol by the isomerization of propylene on an Li_3PO_4 catalyst.

Shuykin, N. I. [Timofeyeva, Ye. A.] and others.
TRANSFORMATION OF C_5-C_9 ALKANES IN THE PRESENCE OF ALUMINO-CHROMIUM-POTASSIUM CATALYSTS. [1958] 3p. 5 refs.
Order from LC or SLA mi$1.80, ph$1.80 59-10600

Trans. of *Akad[emiya] Nauk SSSR. Otdel[eniye] Khim[icheskikh] Nauk. Izv[estiya], 1958, no. 7, p. 896-898.
Another translation available from ATS $4.50 as 42K28R [1958] 3p.

The transformations of n-alkanes from pentane to nonane were studied in the presence of the alumino-chromium-potassium catalyst, which has shown a high activity in the reaction of dehydrogenation of isopentane. In the given conditions these alkanes produce catalysates containing from 8 to 29% of unsaturated hydrocarbons and from 39 to 50% of aromatic hydrocarbons.

Spengler, G., Frommel, H., and others.
ON THE ADDITIVE COMPOUNDS OF MERCURY AND OLEFINES AND THEIR POSSIBLE USE FOR THE SEPARATION OF OLEFINES (Über Quecksilber - Anlagerungsverbindungen der Olefine und deren möglichen Einsatz zur Olefin - Abtrennung). [1959] [27]p. (1 fig. omitted) 40 refs. Tr57-21.
Order from SLA mi$2.70, ph$4.80 59-10643

Trans. of Brennstoff-Chemie (West Germany) 1956, v. 37, p. 47-53

When olefines are transformed with mercuric acetate in methanol, the reaction rates of 1-, 2-, and 3-olefines stand approximately in the ratios 100 : 10 : 1. There is no appreciable difference between 3-olefines and those in which the double bond is located further towards the middle of the molecule. There is an effect of an iso branching, which depends on the position of the branching with respect to the double bond. This is illustrated on the example of the methyl group. This additive reaction is quite general. All the mercuric salts react with olefines whenever these is a third reaction component which contains a free hydrogen in the molecule. It was possible to separate olefines from mixtures. On the example of the propane - propylene a continuous separation is described.

Timofeyeva, Ye. A. [Shuykin, N. I.] and others.
DEHYDROGENATION OF HYDROCARBONS OF VARIED STRUCTURE IN PRESENCE OF ALUMINA-CHROMIA-POTASSIUM CATALYST. [1958] 5p. 8 refs.
Order from LC or SLA mi$1.80, ph$1.80 59-10599

Trans. of *Akad[emiya] Nauk SSSR. Otdel[eniye] Khim[icheskikh] Nauk. Izvestiya, 1958, no. 7, p. 893-896.
Another translation available from ATS $6.25 as 44K28R [1958] 4p.

The transformations of hydrocarbons of varied structure of the composition C_5, C_6, C_8 in the presence of alumina-chromia-potassium catalyst were studied. The isohexanes and the isooctane gave at 500°, under the stated conditions, high yields in the corresponding unsaturated hydrocarbons (from 30 to 46% in one passage).

Travagli, Guiseppe
KINETIC COMPARISON OF THE ACTION OF VARIOUS ACIDS ON THE CATALYTIC HYDRATION OF ACETONITRILE. [1959] 9p. 6 refs.
Order from SLA mi$1.80, ph$1.80 59-10555

Trans. of Gazzetta Chimica Italiana (Italy) 1957, v. 87. no. 6, p. 830-836.

This study deals with the kinetics of hydrolysis of acetonitrile in nitric, perchloric and hydrochloric acid solution in the absence and in the presence of mercury salts. The reactions occur in a similar manner but there is no catalytic effect at all in the hydrochloric acid medium, whereas it is considerable and more than considerable in nitric acid and in perchloric acid solution, respectively. The characteristic parameters of the reactions studied are given.

Ueberreiter, Kurt and Sorge, Gunther
SENSITIZED PHOTOPOLYMERIZATION OF STYRENE. PART III: FLUORENONE PEROXIDE-STYRENE SYSTEM; PHOTOPOLYMERIZATION. [1959] 36p. 25 refs.
Order from SLA mi$3.00, ph$6.30 59-10941

Trans. of Zeitschrift für Physikalische Chemie (West Germany) 1957, N. F. v. 13 [no. 3/4] p. 158-183.

Styrene is polarized at 15°C with visible monochromatic light, with addition of fluorenone and fluorenone peroxide. The dilatometrically measured polymerization velocities, the viscosimetrically

determined degrees of polymerization and the average life span of the polymeric radical, obtained according to the method of the rotating polymeric sector, result in the following most probable constants for styrene polymerization at 15° C: $k_a = 40 \pm 20$ kg/Mol . s and $k_w = (4,0 \pm 2,0) \cdot 10^7$ kg/Mol · s. The quantrum yields of the total reaction and of the initial reaction are determined. The latter are around 0.04. They seem to increase with increasing sensitizer concentrations and to decrease with increasing light intensity. The sensitizing is done by energy conduction across hydrogen bridges. The velocity constants of styrene polymerization published by other authors are discussed.

Vartanyan, S. A., Pirenyan, S. K., and Musakhanyan, G. A.
THE MECHANISM OF ACETYLENE POLYMERIZATION. [1959] 5p.
Order from ATS $7.35 ATS-93L30R

Trans. of Akad[emiya] Nauk Armyan[skoy] SSR [Yerevan]. Doklady, 1958, v. 27, no. 2, p. 81-85.

Vul'fson, N. S. and Iodko, M. O.
SYNTHÈSE DE L'ACIDE O-PHÉNYLÈNE-ACÉTIQUE B PROPIONIQUE ET DE SON ESTER MARQUÉS AU ^{14}C DANS LE GROUPE CARBOXYLE DE LA CHAINE PROPIONIQUE [Synthesis of O-phenylene-acetic-β-propionic Acid and of its Ester Labeled with C^{14} in the Carboxyl Group of the Propionic Chain] tr. by Mme. Masour. 9 Feb 59 [8]p. 4 refs. Trans. no. R 601 (text in French).
Order from LC or SLA mi$1.80, ph$1.80 CEA-tr-R601

Trans. in French of [Ukrainskiy] Khim[icheskiy Zhurnal] (USSR) 1957, v. 23, no. 4, p. 486-488.

Wiberg, E[gon] and Sturm, W[infried]
DERIVATIVES OF $B_3H_3S_3$: PTS. 4-10. [1959] 12p. 13 refs. Trans-Pa-1469.
Order from SLA mi$2.40, ph$3.30 59-10353

Trans. of Zeitschrift [für] Naturforsch[ung] (West Germany) 1955, v. 10b [no. 2] p. 108-115.

Wilson, K[arin].
DETERMINATION OF CARBOXYL GROUPS IN CELLULOSE. [1958] [9]p. 13 refs.
Order from SLA mi$1.80, ph$1.80 59-10916

Trans. of Svensk Pappers-Tidning (Sweden) 1948, v. 51 [no. 3] p. 45-[49].

Several methods have been investigated for determination of the carboxylic groups in cellulose by base-exchange. As this is a question of an acid-base equilibrium pH must be at least 7 to 8 if the hydrogen ion shall be completely replaced by metal-ion. The variation of the cationic exchange capacity with the H-ion concentration is shown graphically over a wide pH-range. It appears that at pH 8.6 reactions not belonging to the acid-base equilibrium become significant, as the cation exchange capacity then shows a pronounced increase. The determination of the carboxylic groups must therefore be carried out with a well-buffered salt solution of pH 7 to 8. Calcium or sodium acetate (0.1N) fulfil this condition, but owing to the slight slope of the neutralisation curves, the titration of the liberated acid cannot be carried out with very great accuracy in these mediums. For this reason it is better to use a solution 0.01N with regard to sodium bicarbonate and 0.1N with regard to sodium chloride, which will give a well-buffered pH of 8 to 8.5 and which can easily be titrated with 0.01N hydrochloric acid against methyl-red. Certain other methods suggested in the literature, e.g. treatment with silver-o-nitrophenolate or direct potentiometric titration of the pulp suspension, have been examined and found to be less suitable.

Physical Chemistry

ZHURNAL FIZICHESKOY KHIMII (USSR) 1958, V. 32, NO. 8, P. 1697-1933 (Journal of Physical Chemistry). [1958] 1v. SOV-76-32-8-(1-37)/37.
Order from OTS $0.50, $6.00/year PB 141 072T-8

Consists of abstracts in English.

Banik, Emil.
A STUDY OF EXPLOSIVENESS OF AMMONIA - AIR MIXTURES (Eine Studie über die Explosionsgefahrlichkeit von Ammoniak - Luft - Gemischen) [1958] [10]p. 9 refs. Tr57-118.
Order from SLA mi$1.80, ph$1.80 59-10591

Trans. of Explosivstoffe (West Germany) 1957, v. 5, no. 2, p. 29-32.

Bartels, Hans
A NEW METHOD OF TEMPERATURE MEASUREMENT IN HIGH-TEMPERATURE ARC COLUMNS; PART I (Eine neue Methode zur Temperaturmessung an hochtemperierten Bogensäulen; I. Teil) tr. by M. I. Weinreich. [1959] [68]p. 14 refs. (Foreign text included). SCL-T-190.
Order from SLA mi$3.90, ph$10.80 59-10429

Trans. of Zeitschrift für Physik (Germany) 1950, v. 127, p. 243-273.

Bartels, Hans
A NEW METHOD OF TEMPERATURE MEASUREMENT IN HIGH TEMPERATURE ARC COLUMN DISCHARGES; PART II (Eine neue Methode zur Temperaturmessung an hochtemperierten Bogensäulen; II. Teil) tr. by Marcel Weinreich. [1959] 36p. SCL-T-202.
Order from SLA mi$3.00, ph$6.30 59-10301

Trans. of Zeitschrift für Physik (Germany) 1950, v. 128, p. 546-574.

Berthier, Gaston
THEORETICAL PROBLEMS ASSOCIATED WITH THE DETERMINATION OF THE COEFFICIENTS OF AUTODIFFUSION IN SOLIDS BY THE METHOD OF HETEROGENEOUS ISOTOPIC EXCHANGES. [1959] 22p. 9 refs. AEC-tr-3241.
Order from SLA mi$2.70, ph$4.80 59-10390

Trans. of J[ou]r[nal] de Chimie Physique (France) 1952, v. 49 [no. 10] p. 527-536.

Use of the method of heterogeneous isotopic exchanges for the determination of the coefficients of autodiffusion in solids requires explicit knowledge of the equations that represent the kinetics of the phenomenon utilized. These equations are given in the form of numerical tables that permit a convenient evaluation of the coefficients of autodiffusion.

Bohnenkamp, K. and Engell, H. J.
MEASUREMENTS OF THE IMPEDANCE OF THE PHASE BOUNDARY BETWEEN GERMANIUM AND ELECTROLYTE. [1959] 45p. 20 refs.
Order from SLA mi$3.30, ph$7.80 59-10962

Trans. of Zeitschrift für Elektrochemie (West Germany) 1957, v. 61, no. 9, p. 1184-1196.

Measurements of the phase boundary impedance were carried out on germanium electrodes with and without doping in various electrolytes. The effect of temperature and incident light was examined. The measured capacitance values exhibit the variation expected from the space charge distribution in the germanium. The absolute values of the theoretical space charge capacitance are obtained for maximum measuring frequency employed, amounting to 160 kc. The values measured at lower frequencies are higher by factors which are independent of the potential. The relation between the surface concentration of the holes and the anodic current density which was observed independently of the doping of the germanium and the various electrolytes is remarkable. The capacitance values of the doped specimens are higher than for the intrinsic conductor, but otherwise exhibit extensive deviations from the theoretical curves. The current and capacitance values observed on excess-conducting specimens at a higher anode load correspond to a reduction in number or exhaustion of holes.

Boreskov, G. K., Slin'ko, M. G. and Chesalova, V. S.
ACTIVITÉ CATALYTIQUE SPÉCIFIQUE DU PLATINE. II. INTERACTION ENTRE L'OXYGÈNE ET L'HYDROGÈNE [Specific Catalytic Activity of Platinum. II. Interaction Between Oxygen and Hydrogen] tr. by M. Schkaff. 20 Nov 58 [14]p. 12 refs. Trans. no. R 301 (text in French).
Order from LC or SLA mi$2.40, ph$3.30 CEA-tr-R301

Trans. in French of [Zhurnal] Fiz[icheskoy] Khim[ii] (USSR) 1956, v. 30, no. 12, p. 2787-2793.

On a étudié par la méthode de circulation en régime stationnaire, l'activité catalytique du fil et de la feuille de platine, ainsi que du gel de silice platiné, dans la réaction de l'hydrogène avec l'oxygène a 50 - 100°C. La vitesse réactionnelle de l'hydrogene avec l'oxygène sur du platine, lors d'un grand excès d'hydrogène, est directement proportionnelle à la concentration de l'oxygène en phase gazeuse. L'activité catalytique spécifique du platine est fonction des conditions de traitement préalables. Le traitement par l'hydrogène à 500° à pour effet une augmentation de l'activité catalytique, suivie, lors d'un essai prolongé, d'une baisse jusqu'à ce que soit atteint un état stationnaire. Après le traitement par l'air, l'activité catalytique devient sensiblement inférieure à l'activité stationnaire, mais augmente graduellement au cours de l'essai. La modification de l'activité catalytique semble liée à l'adsorption d'oxygène. A l'état stationnaire les activités catalytiques du platine (rapportées à l'unité de surface) dans les catalyseurs examinés sont à peu près égales, bien que les dimensions des cristaux et la surface d'une unité de poids du platine y diffèrent de cinq ordres de grandeur.

Broeder, J. J., Reijen, L. L. van and others.
CONTRIBUTION TO THE PROBLEM OF THE NATURE OF THE LINKAGE IN THE CHEMICAL SORPTION OF HYDROGEN ON TRANSITION METALS (Zur Frage des Bindungscharakters bei der Chemisorption von Wasserstoff an Übergangsmetallen). [1958] [22]p. 42 refs. Tr57-104.
Order from SLA mi$2.70, ph$4.80 59-10572

Trans. of Zeitschrift für Elektrochemie (West Germany) 1956, v. 60, no. 8, p. 838-847.
Another translation available from ATS $15.75 as 79K26G [1958] 16p.

Three typical properties of the metal were studied: (1) photoelectric emission of films obtained by condensation of metal vapor, (2) electrical conductivity of those films, and (3) ferromagnetism of highly dispersed nickel. It is proven that the chemical sorption of hydrogen on nickel should not be regarded as a pure donor-acceptor reaction. The actual state of linkage may be described by a mesomerism in which the homeopolar limiting structure strongly prevails. This is in agreement with the results of all the measurements. In addition ionogenic limiting forms occur, which are responsible for the dipole moments of the adsorption layer. It is possible to predict theoretically the sign of the dipole moment to be expected. The results are confirmed by experiments.

Denisov, E. T. and Emanuel, N. M.
THE MECHANISM OF THE ACTION OF INHIBITORS IN CHAIN REACTIONS OF LIQUID PHASE OXIDATION. [1959] [110]p. 81 refs.
Order from LC or SLA mi$5.70, ph$16.80 59-10730

Trans. of Uspekhi Khimii (USSR) 1958, v. 27, no. 4, p. 365-402.

The present survey is devoted to the analysis of the chemical mechanism of the action of inhibitors and of the theoretical interpretation of the characteristics of this action on the basis of the theory of chain reactions through degenerative branching developed by N. N. Semenov.

Enikolopyan, N. S., Polyak, S. S., and Shtern, V. Ya.
ON THE NATURE OF COOL FLAME PHENOMENA, tr. by B. W. Kuvshinoff. 17 Feb 59 [8]p. 12 refs. TG 230-T59.
Order from OTS $0.50 59-11925

Trans. of Zhurnal Fizicheskoy Khimii (USSR) 1958, v. 32, no. 9, p. 2224ff.

The theory suggested by R. W. Pease (Equilibrium and kinetics of gas reactions, p 211, Princeton Univ. Press, 1942) and extended by R. W. Norrish (Proc. Roy. Soc. (London) [A]231: 151, 1954 and Trans. Faraday Soc. 50: 928, 1954) that cool flames result from thermal instability in a reacting system is discussed and compared with the theory expressed by M. B. Neiman (Uspekhi Khimii 7: 341, 1938) that coo flames result from the accumulation of critical concentrations of organic peroxides which explode in a chain reaction, forming large quantities of free radicals inhibiting complete combustion. It is shown that ignition has a chain rather than a thermal nature and a new theory is presented in which it is suggested that cool flame is a chain ignition of the original combustible delayed because of the transition of the system into the region of the negative temperature coefficient.

Flid, R. M.
THE KINETICS AND MECHANISM OF CATALYTIC CONVERSIONS OF ACETYLENE. II. SOME QUESTIONS OF THE MECHANISM OF THE ADDITION OF VARIOUS MOLECULES TO ACETYLENE, tr. by Barbara J. Odorkiewicz. 14 Jan 59 [15]p. 34 refs.
Order from LC or SLA mi$2.40, ph$3.30 59-10444

Trans. of Zhur[nal] Fiz[cheskoy] Khim[ii] (USSR) 1958, v. 32 [no. 10] p. 2339-2346.

A critical examination was made of existing concepts on the mechanism of some catalytic conversions of acetylene. The catalyst must be capable of forming complexes both with acetylene and with the molecule being added. Under steady-state conditions, a ternary, unstable, probably acetylene-catalyst-addend complex is formed during activation of the components. In a number of cases the overall rate is determined by the rate of activation of components. To obtain the maximum selectivity, the initial mixture must contain an excess of the component towards which, under the given conditions, the catalyst has the lowest affinity.

Frumkin, A.
ADSORPTION PHENOMENA AND ELECTROCHEMICAL KINETICS (Adsorptionserscheinungen und elektrochemische Kinetik). [1959] [35]p. 135 refs. Trans. no. 2976.
Order from SLA mi$3.00, ph$6.30 59-10825

Trans. of Zeitschrift für Elektrochemie (West Germany) 1955, v. 59, no. 7/8, p. 807-818.

A number of methods suitable for the determination of ρN charge on the metal surface are reviewed. Objections are raised against the opposing of "Lippmann potentials", and "Billiter potentials" as proposed by Oel and Strehlow (Z. phys. Chem. [N. F.]1: 241, 1954; and Z. Elecktrochemie 58: 665, 1954). A particularly marked correlation between the kinetics of the electrochemical reaction and the sign of the charge on the metal surface or the structure of the ion double layer is observed in the reduction of polyvalent anions, entirely in accordance with theoretical expectations. In attempts to account for the influencing of the kinetics of electrochemical processes by the adsorption of foreign anions, a distinction must be made between effects that can be explained from changes in the structure of the double layer on the one hand, and changes that indicate a more intimate chemical interaction between adsorbed anions and metal surface on the other. The mechanism of the effect of adsorbed neutral molecules on electrochemical processes is discussed briefly.

Fuks, G. I.
INVESTIGATION OF BOUNDARY FRICTION AND ADHESION IN ORDER TO STUDY THE INTERACTION OF HIGHLY DISPERSED PARTICLES. I. SOME BOUNDARY PROPERTIES OF SOLUTIONS IN THE FLAT NARROW SPACES BETWEEN SOLID BODIES. [1959] 14p.
Order from ATS $15.75 ATS-29L30R

Trans. of *Kolloid[nyy] Zhur[nal] (USSR) 1958, v. 20, no. 6, p. 748-758.

Gel'd, M. and Riabov, R.
VITESSE DE DIFFUSION DE L'HYDROGÈNE DANS LES ALLIAGES FER-CHROME [Velocity of the Diffusion of Hydrogen in Iron-Chromium Alloys] tr. by I. Melnick. 8 Dec 58 [6]p. 2 refs. Trans. no. R 566 (text in French).
Order from LC or SLA mi$1.80, ph$1.80 CEA-tr-R566

Trans. in French of Fiz[ika] Metall[ov] i Metallov[edeniye] (USSR) 1958, 5 [?] 1 (13) p. 191-192.

Golik, A. Z. and Karlikov, D. N.
RELATION ENTRE LE COEFFICIENT DE VISCOSITÉ ET LA STRUCTURE DE LA SUBSTANCE A L'ÉTAT LIQUIDE [Relation Between the Coefficient of Viscosity and the Structure of the Substance in the Liquid State] tr. by B. de Trezvinsky. 12 Sep 58 [9]p. 9 refs. Trans. no. R 473 (text in French).
Order from LC or SLA mi$1.80, ph$1.80 CEA-tr-R473

Trans. in French of Akad[emiya] Nauk SSSR. Dok[lady] 1957, v. 114, no. 2, p. 361-364.

Three "isoviscous" solutions of Zn and Cd in Hg are shown to be of similar molecular structure.

Gonikberg, M. G.
REGULAR SOLUTIONS OF GASES IN LIQUIDS. I; REGULAR SOLUTIONS OF HYDROGEN. [1959] 13p. 21 refs.
Order from LC or SLA mi$2.40, ph$3.30 59-10285

Trans. of Zhurn[al] Fiz[icheskoy] Khim[ii] (USSR) 1940, v. 14, p. 582-588.

It has been established that the theory of regular solutions may be applied to solutions of hydrogen in nonpolar and little-polar solvents. An equation is proposed which embraces equilibrium conditions of the system gas-liquid at high concentrations and pressures. The applicability of this equation is shown to solutions of hydrogen in liquid ethane, nitrogen, carbon monoxide and ethylene. It has been shown that the partial molar volumes of hydrogen in certain solvents at certain conditions are close to the molar volume of liquid hydrogen at $p = 1$ atm. It has been established that the assumption that the partial molar volumes of a dissolved gas do not depend upon pressure and concentration in the observed systems does not lead to errors in excess of the experimental error of measurements. The possibility of an approximate calculation of Henry's coefficients at small pressures and concentrations for solutions of gases in nonpolar and slightly polar solvents has been demonstrated.

Granovskaya, A. A. and Lyubimov, A. P.
MEASUREMENT OF SMALL VAPOR PRESSURES AT HIGH TEMPERATURES; V: PARTIAL PRESSURES OF THE COMPONENTS IN THE IRON-PHOSPHORUS SYSTEM. Apr 59.
Order from HB $3.25 HB-4486

Trans. of Zhurnal Fiz[icheskoy] Khimii (USSR) 1953, v. 27, no. 10, p. 1443-1445.

Usefulness of numerical data on vapor pressure of phosphorus over liquid metal for calculations about transfer of P in blast furnace process and distribution of P between metal and slag in steelmaking. Experimental procedure. Results of measurements of partial pressures of iron and phosphorus, at phosphorus concentrations below 1.0%, between 1540 and 1620°C; equality between molar concentrations and activities of components. Calculation of heat of volatilization of iron and of heat of solution of P in iron. Form in which P is present in iron within concentration range of from 0.1 to 1.0% P. (HB abstract)

Grinberg, A. A. and Borzakova, S. S.
PHÉNOMENÈS D'ECHANGE DE LA THIOURÉE DANS LES COMPOSÉS COMPLEXES DU PLATINE BIVALENT [Exchange of Phenomena of Thiourea in Complex Compounds of Bivalent Platinum] tr. by M. Schkaff. 25 Nov 58 [8]p. 3 refs. Trans. no. R 582 (text in French).
Order from LC or SLA mi$1.80, ph$1.80 CEA-tr-R582

Trans. in French of [Zhurnal] Neorg[anicheskoy] Khim[ii] (USSR) 1957, v. 2, no. 10, p. 2368-2370.

In the aqueous solution $[Pt(Thio)_4](OH)_2$, a gradual penetration of the hydroxyl radicals into the interior of the complex compound takes place, accompanied by a displacement of the thiourea. This process of incorporation of the hydroxyls can be inhibited by the introduction into the solution of an excess of thiourea. The hypothesis that in the aqueous solutions of $[Pt(Thio)_4]X_2$ salts there must be an exchange of molecules between the complex ion and the free molecules of thiourea present in the solution is examined by means of radioactive S^{35}.

Izgaryshev, N. A.
INFLUENCE OF THE CATIONS ON THE ANODIC PROCESSES IN THE ELECTROLYSIS OF CHLORIDE AND OF SULFATE SOLUTIONS. [1958] 21p. 13 refs.
Order from LC or SLA mi$2.70, ph$4.80 59-10499

Trans. of Akad[emiya] Nauk SSSR. Otdel[eniye] Khim[icheskikh Nauk] Izvest[iya] [1950, no. 1] p. 15-26.

A comparative study of anodic processes in the electrolysis of the following chlorides was performed: magnesium, calcium, barium, lithium, sodium, potassium, rubidium and ammonium chlorides. The course of the process was studied by the methods of chemical analysis as well as by the method of polarization curves. Analogous studies were made with the objects to investigate the anodic process for the synthesis of persulfates from K, Na, NH_4, Li, Mg, Zn, and Al sulfates.

Kachurin, L. G.
COMPARISON OF VARIOUS EQUATIONS FOR THE FREEZING OF SUPERCOOLED AQUEOUS AEROSOLS. 13 Apr 59, 14p. (5 figs. omitted) 30 refs. JPRS: L-1620-D.
Order from OTS $0.50 59-11503

Trans. of *Akademiya Nauk SSSR. Izvestiya. Seriya Geofizicheskaya, 1959, no. 1, p. 122-130.

Meteorological data are reviewed which indicate that the range of temperatures most characteristic for strong formation of ice particles in clouds and fogs falls between the bounds -10 and -20°C. The calculated range of strong freezing of supercooled aqueous aerosols is limited by approximately the same temperature range. It is necessary to measure the rate of freezing of supercooled aqueous aerosols in order to apply suitable methods of calculation.

Kasatochkin, V. I. and Kaverov, A. T.
ELECTRICAL PROPERTIES AND STRUCTURE OF TRANSITIONAL FORMS OF CARBON. [1958] 6p. 8 refs.
Order from LC or SLA mi$1.80, ph$1.80 59-10395

Trans. of *Akad[emiya] Nauk SSSR. Dokl[ady] 1958, v. 120, p. 1007-1010.

Results are presented of an experimental investigation of the thermoelectromotive force, the electric resistance, and the structure of transitional forms from "amorphous carbon" to graphite, formed by high-temperature treatment of different starting carbonic substances. The samples investigated were produced by isothermal calcination of petroleum cokes (of pyrolysis and of cracking) and of carbon blacks (channel and thermal) in a steam of nitrogen at temperatures up to 3200°. The thermoelectromotive force was measured in comparison to copper at a constant difference of temperature $\Delta T = 20°$. The electric resistance of the powders was determined at a pressure of 40 kg/sq cm. In homogeneous graphitization of

petroleum coke at t > 2000°, the coefficient of thermoelectromotive force (α) and the specific electric resistance (ρ) diminish directly with the interlayer distance d_{002}. An inverse increase of α and ρ in dependence on t and τ is observed for channel carbon black not graphitizing at these temperatures. An increase of α is also observed in the precrystallization period of the calcination of petroleum coke to 2000°. For amorphous carbon (channel carbon black), α and specific electroconductivity (σ) are in the dependence $\alpha = a - b \log \sigma$, where a is 64.3 and b is 76.5. The link between a and b at the stage of homogeneous graphitation is described by $\alpha = A/\sigma - B$, where A is 864.8 and B is 1.42. A valency state of atoms is realized in the layers of graphite. This state corresponds to the trigonal form of carbon with valency electrons, localized in the σ links with three neighbors and with a fourth valency electron, entering the system of conjugated π bonds, which determine by their mobility the electronic conductivity of the layer.

Klyachko, Yu. A., Izmanova, T. A. and Kunin, L. L.
ELECTROCHEMICAL PROPERTIES OF HYDROGEN IN ALLOYS WITH AN IRON BASE (Elektrokhimicheskiye Svoystva Vodoroda v Splavakh na Zheleznoy Osnovye) tr. by A. Pingell. 1958 [4]p. 4 refs. Trans. no. 704.
Order from LC or SLA mi$1.80, ph$1.80 59-10463

Trans. of Khimicheskaya Nauka[i Promyshlenost'] (USSR) 1958, v. 3, no. 1, p. 127.

An investigation was made of the hydrogen mobility in an iron alloy under the influence of an electric field. A direct current, sufficient to cause a 50-mv drop, was passed through a forged specimen (which was finished on a turner's lathe) 8 mm in diam by 400 mm long, for periods up to 100 hr. The specimen was then cut into 16-mm-long cylinders that were analyzed for hydrogen content by the vacuum-fusion method (Zavodskaya Lab. 6: 657, 1954 and Metallurgizdat, 1953). Tabulated results show that hydrogen can move either towards the cathode or towards the anode and that, contrary to the general theory, the greater portion of the hydrogen in iron may be displaced towards the anode during electrolysis: thus in iron alloys, hydrogen is both negative and positive. The presence of hydride-forming elements and/or elements responsible for the formation of austenitic structure increases the negative portion of the hydrogen.

Kobozev, N. I.
ON THE MECHANISM OF CATALYSIS, PT. I. [1959] 28p. 51 refs.
Order from LC or SLA mi$2.70, ph$4.80 59-10305

Trans. of Zhur[nal] Fiz[icheskoy] Khim[ii] (USSR) 1957, v. 31 [no. 10] p. 2162-2183.

The mechanism of heterogenous catalysis is analyzed, with specific reference to hydrogenation of the ethylenic bond.

Kobozev, N. I., Nekrasov, L. I. and Eremin, E. N.
THE PHYSICAL CHEMISTRY OF CONCENTRATED OZONE. I. SYNTHESIS OF THE HIGHER PEROXIDE H_2O_4 USING CONCENTRATED OZONE. [1959] 3p. 8 refs.
Order from CCT $10.50 CCT-274TT

Trans. of Zhurnal Fizicheskoy Khimii (USSR) 1956, v. 30, p. 2580-2581.

A substance of stoichiometric composition H_2O_4 was obtained in experiments performed in 1951, in which liquid ozone was bombarded with atomic hydrogen; this peroxide, which decomposes at about - 115°C, yields a more than 30% aqueous solution of hydrogen peroxide, H_2O_2, with equivalent evolution of oxygen. (CCT abstract)

Kokushkin, N. V.
STUDY OF COMBUSTION OF A HOMOGENEOUS MIXTURE IN A TURBULENT FLOW BY RECORDING TEMPERATURE VARIATIONS [Issledovaniye Sgoraniya Gomogennoy Smesi v Turbulentnom Potoke Posredstvom Zapisi Pul'satsiy Temperatury] tr. by B. W. Kuvshinoff. 28 Jan 59 [17]p. 9 refs. TG 230-T56.
Order from OTS $0.50 59-11929

Trans. of Akademiya Nauk SSSR. Otdeleniye Tekhnicheskikh Nauk. Izvestiya, 1958, no. 8, p. 3-[11].

The Damköhler-Shchelkin surface theory of combustion is compared with Summerfield's volume theory. Apparatus as well as measurements are described which lead to the conclusion that the thickness of the flame front is 1 mm or less for a flow speed of 25 m/sec and a coefficient of air excess of 1.0 to 2.2.

Kondrat'ev, V. N.
THE DEVELOPMENT OF CHEMICAL PHYSICS IN THE USSR DURING FORTY YEARS. [1959] 12p.
Order from ATS $16.70 ATS-59L30R

Trans. of Uspekhi Khim[ii] (USSR) 1957, v. 26, no. 11, p. 1310-1319.

Leonas, V. B.
A STUDY OF THE INITIATION AND PROPAGATION OF SPHERICAL DETONATIONS, tr. by B. W. Kuvshinoff. 13 Feb 59 [10]p. 8 refs. TG 230-T58.
Order from OTS $0.50 59-11928

Trans. of Zhurnal Fizicheskoy Khimii (USSR) 1958, v. 32, no. 8, p. 1869ff.

Spherical detonation in a propane-oxygen mixture was accomplished with the aid of special devices for accelerating flame propagation. In addition, the results of studies of initiation of detonation in reacted gas are presented. The theoretically predicted reflection of a detonation converging to a point has been realized experimentally.

Nåser, Gerhard and Pepperhoff, Werner.
OPTICAL TEMPERATURE MEASUREMENTS OF

LUMINOUS FLAMES (Optische Temperaturmessungen an Leuchtenden Flammen) tr. by Mary L. Mahler. Jan 58 [18]p. 12 refs. N-51382x.
Order from SLA mi$2.40, ph$3.30 59-10339

Trans. of Archiv für das Eisenhüttenwesen (West Germany) 1951, v. 22, no. 1/2, p. 9-14.

A discussion is presented of the optical properties of luminous flames, calculation of the true flame temperature from color temperature and black-body temperature, wavelength dependence of the absorption coefficient of luminous flames, size of the carbon particles in luminous flames, and flame-temperature measurements by means of the "Bioptix" color-brightness pyrometer.

Parissakis, G. and Treadwell, W. D.
ELECTROLYSIS OF MOLTEN LITHIUM CHLORIDE, tr. by A. Gottfurcht. [1959] 8p. 11 refs. Trans-Pa-2070.
Order from SLA mi$1.80, ph$1.80 59-10438

Trans. of Helvetica Chimica Acta (Switzerland) 1955, v. 38, p. 1749-1756.

Experiments are described on the preparation of lithium by molten-salt electrolysis. From the found difference of the decomposition voltages of LiCl and KCl in their eutectic mixture at 405° and potassium content of the obtainable lithium, the solubility of the potassium in lithium at the temperature mentioned is found to be at most 8.7%.

Richter, Manfred.
THE PRESENT STATUS OF COLOR THEORY. [1958] [39]p. 54 refs. T-1842.
Order from SLA mi$3.00, ph$6.30 59-10543

Trans. of Z[eitschrift für] Wiss[enschaftliche] Phot[ographie, Photophysik und Photochemie] (East Germany) 1948, v. 43, p. 209-237.

A survey of recent work in the field of color theory is based on 800 publications which have appeared since 1940. The "German Color Committee," established in 1941, created a German color terminology in the new edition of the standard DIN 5033(12). At the Paris Convention of the International Commission on Illumination the British and American systems were combined into a uniform English terminology. The advantages of photo-electric colorimetry over the spectro-photometric method are discussed, but the difficulties of photoelectric cells in the former method are a shortcoming. The advances made by the Swiss photometrists Konig and Mader are analyzed. For subtractive color photography, e. g. the Agfacolor process, the theory of subtraction color mixture has become increasingly important. Research in this field is explained. The report includes a discussion of color systems established by Ostwald, Munsell, Judd, Bouma-Kruithof, Pitt, Walters, Wright, Jordan, Granit, Studnitz-Loevenich, and Kohlrausch.

Röck, H.
GAS CHROMATOGRAPHY AND EXTRACTIVE DISTILLATION (Gaschromatographic und extraktive Destillation). [1959] [22]p. 28 refs. Tr57-28.
Order from SLA mi$2.70, ph$4.80 59-10641

Trans. of Chemie-Ingenieur-Technik (West Germany) 1956, v. 28 [no. 7] p. 489-495.

Rogovaya, I. A. and Ishkin, I. P.
AN ANALYSIS OF THE THERMODYNAMIC PROPERTIES OF ARGON, NITROGEN AND ARGON-NITROGEN MIXTURE BY THE METHODS OF STATISTICAL THERMODYNAMICS (Analiz Termodinamicheskikh Svoystv Argona, Azota i Argo-Azotnoy Smes i Metodami Statisticheskoy Termodinamiki). [1958] [24]p. 8 refs. (includes foreign text) UCRL Trans. no. 368.
Order from LC or SLA mi$2.70, ph$4.80 59-10411

Trans. of Zhurnal Fizicheskoy Khimii (USSR) 1957, v. 31, no. 3, p. 573-581.

The intermolecular energy and thermodynamic properties of argon and argon-nitrogen mixtures are calculated by an experimentally determined isothermal coefficient of throttling. The characteristic constants for the Lennard-Jones potential were obtained from the isothermal coefficient data at 0 pressure, and the intermolecular potential constants for the argon-nitrogen mixture were calculated from the constants for pure gases. The zero pressure isothermal coefficient of throttling for various temperatures, specific volumes, and coefficients of throttling at near-critical pressures were calculated for argon, nitrogen, and a 50% argon-nitrogen mixture by using the Lennard-Jones potential and statistical thermodynamics. The potential was used to describe the intermolecular energy of compounds with close values of the dimensionless critical parameters. The usefulness of The Theory of Corresponding States was verified.

Rüdorff, W. and Stumpp, E.
THE EXISTENCE OF BORON NITRIDE INTERCALATION COMPOUNDS. 18 Feb 59 [4]p. 7 refs.
Order from SLA mi$1.80, ph$1.80 59-10735

Trans. of Zeitschrift für Naturforschung (West Germany) 1958, v. 13b [no. 7] p. 459.

No formation of intercalation compounds occurred either by analytical or x-ray methods of reaction of boron nitride with $FeCl_3$, $CoCl_2$, $CoBr_2$, $NiCl_2$, $AlBr_3$ and the boron halides. Expansion of the boron nitride lattice did not appear at temperatures of 300° and 400° C. and only iron traces occurred after washing. Boron nitride used in experiments was obtained by the Meyer and Zappner method from BCl_3 and NH_3 and by rapid heating of a mix ure of NH_4Cl and borax to 1500°. The latter source was pure white and contained 98 to 99% boron nitride, but the lattice was imperfect. Croft's investigations, which alleged metal halides formed intercalation compounds with the lattice of boron nitride, was contradicted. Croft's source was thought not to be boron nitride. Boron nitride yielded a black product with rapid heating above

2000° in a graphite boat. The product did not have boron nitride reflections, but had an entirely different univestigated diagram.

Sabatier, G.
KINETICS OF THE DEHYDRATION OF SEVERAL SILICATES. [1959] 11p. (5 figs. 2 tables omitted) 1 ref.
Order from SLA mi$2.40, ph$3.30 59-10263

Trans. of Journal de Ch[i]mie Physique (France) 1955, v. 52 [no. 1] p. 60-64.

The kinetics of the dissociation, at constant temperature, was studied of talc ($Si_4O_{10}(OH)_2Mg_3$), pyrophyllite ($Si_4O_{10}(OH)_2Al_2$), kaolinite ($Si_4O_{10}(OH)_8Al_4$), and muscovite ($(Si_3Al)O_{10}(OH)_2Al_2K$). The dissociation obeyed laws which depend on the structural transformations accompanying the loss of water. The values of the energies of activation are given. These results were used to calculate the dissociation curves recorded by a thermobalance, with a constant rate of heating under conditions used frequently in practice. The results of these calculations show a good agreement with the given experiments.

Samoylov, O. Ya.
STRUCTURE DE QUELQUES LIQUIDES. II. STRUCTURE DE L'EAU ET DES SOLUTIONS AQUEUSES D'ÉLECTROLYTES [Structure of Some Liquids. II. Structure of Water and Aqueous Solutions of Electrolytes] tr. by B. Vinogradoff. 29 Nov 57 [44]p. 82 refs. Trans. no. R 378 (text in French).
Order from LC or SLA mi$3.30, ph$7.80 CEA-tr-R378

Trans. in French of [Zhurnal] Fiz[icheskoy] Khimii (USSR) 1957, v. 31, no. 3, p. 537-553.

Les résultats d'études de l'eau à l'aide de rayons X, ainsi que les recherches sur l'autodiffusion, montrent que la structure ordonnée proche de l'eau conserve dans la disposition des molécules la structure de la glace. Le mouvement de translation des molécules de l'eau produit un remplissage des vides de la structure. Les anomalies observées de l'eau ne sont pas liées aux associations des molécules, mais aux particularités de la structure de l'eau, qui consistent, primo, dans une structure ajourée et, secondo, dans le fait que la coordination proche des molécules de l'eau est plus nettement exprimée que celle des autres liquides. La deuxième particularité est liée à une solidité relative des liaisons hydrogène de l'eau. La structure des solutions aqueuses diluées des électrolytes dans la majorité des cas est déterminée par la structure de l'eau et la structure des solutions concentrées par la structure de l'hydrate cristallin correspondant (si le sel donné donne des hydrates cristallins). Dans le domaine de transition, pour certaines températures et certaines concentrations, il existe en même temps une structure ordonnée proche de l'eau et une structure ordonnée proche de l'hydrate cristallin.

Smith, L[ennart] and Olsson, H[ugo].
THE DEPENDENCE OF THE VELOCITY OF ALKALINE HYDROLYSIS ON THE CONSTITUTION OF ALCOHOL II. [1958] 8p. 12 refs.
Order from SLA mi$1.80, ph$1.80 59-10673

Trans. of Zeitschrift für Physikalische Chemie (West Germany) 1925, v. 118, p. 99-106.

Carefully purified esters were used to determine the influence of the alkyl radical on the alcohol in accelerating alkaline hydrolysis. The esters investigated were normal butyl acetate, isobutyl acetate, secondary butyl acetate, tertiary butyl acetate, primary propyl glycolate, and secondary propyl glycolate. Aqueous solutions of the glycolic acid esters were prepared, and known amounts were added to known amounts of NaCH by pipette. Nitric acid was added to end the reaction, and the ester concentration was determined by total saponification of 2 samples. The decompositions were similar to those of prior experiments (Zeitschrift für Physikalische Chemie 102: 26, 1922) on other esters, except for the glycolic acid, which had a very high decomposition velocity. An H_2 or CH_3 substitution in the beta or gamma position relative to the HO^- group of the alcohol was of little influence, but the same substitution at the alpha position was very influential and had a retarding action in the substitution of a sec alcohol. The figures on velocity constants rejected the acid as a factor in the influence of the alkyl and revealed the significance of the acid composition as well as that of the alcohol in alkaline saponification. The hydrolysis constants of methyl and ethyl acetates were compared with the results from previous works. Van't Hoff's theory that the influence of the alcohol is somewhat greater than that of the acid remained valid for single esters of fatty acids and paraffin alcohols. For secondary and tertiary esters, the theory did not agree, since the valance decreases and causes increase in saponification, though this reaction may be masked. Factors having a retarding action on the saponification, such as molecule enlargement, are described. (See also TT 59-10671)

Treiber, E., Lang, W., and Mader, E.
ABSORPTION SPECTROPHOTOMETRIC INVESTIGATION OF THE REACTION OF CARBON DISULPHIDE AND SODIUM HYDROXIDE. [1958] [14]p. 52 refs.
Order from SLA mi$2.40, ph$3.30 59-10131

Trans. of Holzforschung (Germany) 1954, v. 8 [no. 4] p. 97-103.

A summary is given of current knowledge concerning the reaction of sodium hydroxide and carbon disulphide, particularly with reference to the xanthation of cellulose. Spectrophotometric investigations are reported of unsettled problems. Particular attention is given to the formation of perthiocarbonates. Samples of carbon disulphide of various degrees of impurity were studied. The influence of emulsifying agents was shown to depend on the composition and concentration of the reagents and on the intensity of stirring during the reaction.

Tsiklis, D. S. and Svetlova, G. M.
SOLUBILITY OF GASES IN CYCLOHEXANE. [1958] 12p. 3 refs.
Order from LC or SLA mi$2.40, ph$3.30 59-10410

Trans. of Zh[urnal] Fiz[icheskoy] Khim[ii] (USSR) [1958] v. 32, no. 7, p. 1476-1480.

The solubility of cyclohexane was determined for hydrogen chloride, nitrosyl chloride, chlorine, nitrogen oxide and hydrogen sulfide at atmospheric pressure and temperatures of 10°, 20° and 40°C. A known amount of cyclohexane was introduced into a test tube, and gas was admitted from a weighed flask. The contents were stirred, the pressure in the system was measured, and partial gas pressure was determined. Solubility in cyclohexane of the investigated gas corresponded to this partial pressure. The solubility of all the gases decreases with increasing temperature. The solubility of hydrogen chloride and nitrogen oxide obey Henry's law. The solubility of the rest of the gases can be expressed by the Krichevski-Ilinskoi equation. Heats of solution of the investigated gases in cyclohexane were calculated.

Ueda, I. and Okada, T.
VOLTAGE BREAKDOWN OF ALUMINA. [1958] 4p. 5 refs.
Order from SLA mi$1.80, ph$1.80 59-10321

Trans. of unknown monograph.

Studies on the voltage breakdown of alkali halide have already been made in detail both experimentally and theoretically. According to Hippel and Fröhlich, breakdown of alkali halide which takes place at the temperature lower than 100° C is supposed to be due to the so-called "electronic disintegration", the breaking power supposedly increasing with the increase of the temperature. In order to know whether this relation between the breaking power and the temperature applies to other substances as well, experiments were carried out using alumina as a sample material

Vasil'yev, B. N.
APPAREIL DESTINÉ À L'ÉTUDE DE L'ADSORPTION À HAUTE PRESSION [Apparatus for the Study of Adsorption at High Pressure] tr. by I. Melnick. 5 May 58 [10]p. 5 refs. Trans. no. R 506 (text in French).
Order from LC or SLA mi$1.80, ph$1.80 CEA-tr-R506

Trans. in French of [Zhurnal] Fiz[icheskoy] Khimii (USSR) 1957, v. 31, no. 2, p. 498-500.

Veselovskiy, V. I.
MECHANISM OF PHOTOELECTROCHEMICAL PROCESSES ON AN Ag-Ag_2O ELECTRODE. [1959] 14p. 5 refs.
Order from CCT $52.50 CCT-280TT

Trans. of Zhurnal Fizicheskoy Khimii (USSR) 1948, v. 22, p. 1302-1311.

The nature of the photogalvanically reacting complex at an anodically polarized Ag electrode is determined, and the relationship between the photogalvanic current and the electrode potential is established. The spectral sensitivity and the red boundary of the photoelectrochemical process at an Ag electrode are determined. A sensitization mechanism for the photoelectrochemical process at the electrode is proposed, and the specific character of the photoelectric liberation of oxygen and of anodic oxidation at an Ag-Ag_2O electrode is demonstrated. An analogy and a relationship between the photochemical process at the electrode and heterogeneous sensitization in solution are demonstrated. (CCT abstract)

Zebel, Günter
ON THE THEORY OF THE BEHAVIOR OF ELECTRICALLY CHARGED AEROSOLS. [1958] 39p. 10 refs.
Order from SLA mi$3.00, ph$6.30 59-10860

Trans. of article from unknown language and source.

A basic theory is presented concerning the behavior of electrically-charged aerosols. The differential equation for the aggregation of electrically-charged aerosol particles is derived and solved. The transport of aerosol particles with electric charges in the electric field produced by the particles themselves is calculated. Combining these results gives an integral-differential equation for the changes of the particle size distribution of electro-aerosols. The following conclusions result from the theory. Two aerosol particles are to be considered as strongly charged if when they are in contact their electrostatic potential energy is large compared to the thermal energy kT. For strong charges of the same sign on particles the inhibition of coagulation depends exponentially on the product of the charges on the particles. For strong charges of opposite sign on particles the promotion of coagulation depends only proportionately on the product of the charges of the particles. If an aerosol is stabilized against coagulation by strong unipolar charges, then, in addition to the inhibition of coagulation, there arises a rarefaction of the aerosol because the aerosol particles endeavor to get away from one another due to electrostatic repulsion. For an aerosol with strongly unipolar charges, consisting only of particles of the same size and with the same charge, the rarefaction resulting from electrostatic repulsion is given exactly by a formal relation between the number of particles per cm^3 and the time. In a formal manner, but not in physical significance, this law agrees with the coagulation law of Smoluchowski (Z. phys. Chem. 92: 129-168, 1918).

Ziegler, G[ünther].
VAPORIZATION IN FLOATING ZONE. [1958] 5p. (4 graphs omitted) 1 ref.
Order from SLA mi$1.80, ph$1.80 59-10732

Trans. of Z[eitschrift für] Metallkunde (Germany) 1958, v. 49 [no. 9] p. 491-494.

Vaporization in the floating zone was investigated by utilizing silicon rods dotted with phosphorus. Mathematical calculations were performed to arrive at approximate values. Concentration curves produced by

zone melting in high vacuum were drastically altered when the impurity element was volatile. The effective distribution coefficient was found to be higher, attributable to the concentration effect on the border. The experiment was extended to determine whether the vaporization coefficient was influenced by vapor molecules that were vaporized or reflected from the container walls.

EARTH SCIENCES

*AKADEMIYA NAUK SSSR. IZVESTIYA. SERIYA GEOFIZICHESKAYA, 1958, NO. 9, P. 1057-1152 (News of the Academy of Sciences of the USSR. Geophysics Series). [1959] 1v. SOV-49-58-9-(1-14)/14.
Order from OTS $0.80, $4.50/6 issues PB 141 042T-7

Consists of abstracts in English.

*AKADEMIYA NAUK SSSR. IZVESTIYA. SERIYA GEOLOGICHESKAYA, 1958, [V. 23] NO. 12, P. 3-126 (News of the Academy of Sciences of the USSR, Geology Series). [1959] 15p. SOV-11-58-12-(1-15)/15.
Order from OTS $0.50,$3/6 issues PB 141 005T-10

Consists of abstracts in English.

Chaplygin, Ye. I. and Alekseyev, Yu. K.
GUIDE TO OBSERVATIONS ON CURRENTS. CHAP. VI. STUDY OF MARINE CURRENTS AND ICE DRIFTS WITH THE AID OF AUTOMATIC DRIFTING RADIO BEACONS. 24 Apr 59, 28p. (15 figs. omitted). JPRS L-1640-D.
Order from OTS $0.75 59-11514

Trans. of mono. Rudovodstvo po Nablyudeniyam nad Techeniyami, Moscow, 1957, p. 152-176.

Topics discussed include (1) a description of Yu. K. Alekseyev's radio beacon (1955/56 model), (2) basic units of an Alekseyev radio beacon, (3) circuit diagram of the radio beacon units, (4) requirements imposed on radio beacons, (5) installation of radio beacons, and (6) reception of radio-beacon signals at radio direction-finding stations.

du Castel, F., Misme, P. and Voge, J.
REFLECTION OF AN ELECTROMAGNETIC WAVE FROM AN ATMOSPHERIC LAYER WITH A VARIATION OF THE INDEX OF REFRACTION. [1958] 4p. 1 ref.
Order from SLA mi$1.80, ph$1.80 59-10961

Trans. of Academie des Sciences, Paris. Comptes Rendus (France) 1958, v. 246 [no. 12] p. 1838-1840.

Hypothetical cases of long distance propagation of ultrashort waves are considered where the angle of incidence of the layer is small (α of the order of 20 to $50 \cdot 10^{-3}$ rad) and where the variations of the index are small (Δn of the order of 1 to $10 \cdot 10^{-6}$) and occur on a small depth (h of the order of 5 to 20m). Results make possible a more general formulation of the reflection coefficient than that used in an earlier paper. (Comptes Rendus 246: 82, 1958).

Climatology and Meteorology

LENIN PRIZE WINNER. 24 Apr 59, 2p.
JPRS L-1635-D.
Order from OTS $0.50 59-11529

Trans. of Meteorologiya i Gidrologiya (USSR) 1958, no. 7, p. 65-66.

The work of M. I. Budyko on the climatology of the heat balance of the earth is briefly described.

METEOROLOGIYA I GIDROLOGIYA (USSR) 1958, NO. 9, P. 3-56 (Meteorology and Hydrology). [1959] 1v. SOV-50-58-9-(1-19)/19.
Order from OTS $0.70, $4/6 issues PB 141 045T-10

Consists of abstracts in English.

METEOROLOGY AND HYDROLOGY: SELECTED ARTICLES. 13 Mar 59, 39p. (3 tables, 11 figs. omitted) 28 refs. JPRS: 1351-N.
Order from OTS $1.00 59-13294

Trans. from Meteorologiya i Gidrologiya (USSR) 1958, no. 1, p. 27-33, 44-49, 53-55, 61-62 and 65-67.

Contents:
Cold intrusions in the region of the Issyk-Kul' Basin in winter, by N. H. Kononova
Use of extrapolation formulas for forecasting shifts of baric centers, by S. V. Soloni
Investigation of the physico-chemical properties of iodide particles which become ice-forming nuclei, by A. D. Malkina
Some characteristics of the results of wave meter observations in the ocean, by G. V. Rzheplinskiy
Use of the cartographic method in climatology, by G. N. Petrov
Accuracy of the preheated psychrometer, by L. G. Kachurin
Nomogram for processing drift ice observations, by S. P. Agureyev
Review of textbook by N. N. Stepanov (Geodesy, Hydrometeorological Publishing House, Leningrad, 1954), by Kh. M. Tsopikiv
Meteorological conference in Berlin, by M. I. Budyko
Scientific session of the Tbilisi NIGMI (scientific research state) meteorological research institute, by G. N. Khmaladze

Antipov, V. P. and Loginov, N. F.
METHOD OF CALCULATING THE HEIGHT OF ASCENT OF RADIOSONDES TAKING INTO ACCOUNT THE STRENGTH OF BALLOONS AT LOW

TEMPERATURE. 24 Apr 59, 10p. 2 refs. JPRS 675-D.
Order from OTS $0.50 59-11523

Trans. of Meteorologiya i Gidrologiya (USSR) 1958, no. 7, p. 11-17.

Bagrov, N. A.
HYDRODYNAMIC METHODS OF LONG-RANGE WEATHER FORECASTING. 19 Mar 59, 14p. 6 refs. JPRS: L-701-N.
Order from OTS $0.50 59-13326

Trans. of Meteorologiya i Gidrologiya (USSR) 1958, no. 11, p. 41-46.

Belousov, S. L.
PRECALCULATION OF THE PRESSURE IN THE MIDDLE TROPOSPHERE FOR THE NORTHERN HEMISPHERE. 19 Mar 59, 9p. (4 figs. omitted) 2 refs. JPRS: L-700-N.
Order from OTS $0.50 59-13325

Trans. of Meteorologiya i Gidrologiya (USSR) 1958, no. 11, p. 3-10.

Bugayev, V. A.
MERIDIONAL METEOROLOGICAL PROFILES. 24 Apr 59, 9p. JPRS 676-D.
Order from OTS $0.50 59-11524

Trans. of Meteorologiya i Gidrologiya (USSR) 1958, no. 7, p. 26-30.

Meteorological observations made aboard the Antarctic expedition ship "Kooperatsiya" from November 10 through December 25, 1957 beginning at 40° N lat. near Portugal and ending at the ice shelf near Mirnyy station are described.

Dydina, L. A.
CONNECTION OF THE BAROMETRIC FIELD NEAR THE GROUND WITH THE DISTRIBUTION OF HEAT AND COLD SOURCE REGIONS IN THE TROPOSPHERE. 24 Apr 59, 6p. 6 refs. JPRS 677-D.
Order from OTS $0.50 59-11525

Trans. of Meteorologiya i Gidrologiya (USSR) 1958, no. 7, p. 32-34.

Gordon, S. M.
THE POSSIBILITY OF USING RADIOSONDE TEMPERATURE DATA FOR HYDROLOGICAL COMPUTATIONS AND FORECASTS. 17 Mar 59, 3p. JPRS:L-686-N.
Order from OTS $0.50 59-13285

Trans. of Meteorologiya i Gidrologiya (USSR) 1958, no. 9, p. 32-34.

Il'inskiy, O. K.
SOME OBSERVATIONS ON THE CONTENTS OF SYNOPTIC METEOROLOGICAL MANUALS. 24 Apr [59] 3p. JPRS 679-D.
Order from OTS $0.50 59-11527

Trans. of Meteorologiya i Gidrologiya (USSR) 1958, no. 7, p. 59-60.

Koshinskiy, S. D.
CONSTRUCTING CHARTS OF THE WIND FIELDS OVER THE SEA. 17 Mar 59, 10p. 3 refs. JPRS: L-685-N.
Order from OTS $0.50 59-13284

Trans. of Meteorologiya i Gidrologiya (USSR) 1958, no. 9, p. 27-31.

Metveyev, L. T. and Zyabrikov, V. A.
QUALITATIVE ANALYSIS OF CONDITIONS IN THE FORMATION OF VORTICES IN THE ATMOSPHERE. 24 Apr 59 13p. 14 refs. JPRS 678-D.
Order from OTS $0.50 59-11526

Trans. of Meteorologiya i Gidrologiya (USSR) 1958, no. 7, p. 42-47.

Orlova, Ye. M.
NONPERIODIC OSCILLATIONS OF THE ALTITUDE OF THE TROPOPAUSE IN CONNECTION WITH SYNOPTIC PROCESSES. 24 Apr 59, 10p. 2 refs. JPRS 674-D.
Order from OTS $0.50 59-11522

Trans. of Meteorologiya i Gidrologiya (USSR) 1958, no. 7, p. 3-10.

The extent to which oscillations (variations) of the altitude of the tropopause depend on processes in the lower troposphere is described. On the basis of these processes, the sign and magnitude of the change in the altitude of the tropopause may be judged. The exposition of this relationship is of practical interest since, in preparing the weather forecast, the forecaster does not compute local temperature changes at altitudes in the region of the tropopause that depend on the aforementioned factors. The 100 cases of changes in the stratification of temperature and distribution of moisture in the troposphere and lower stratosphere analyzed showed that small variations in the altitude of the tropopause (0.0 - 0.5 km) were usually observed while the character of development of synoptic processes was retained in the lower troposphere. More significant changes in the tropopause (1 - 5 km during a 12-hour period) occurred when there was a change in the synoptic processes or a change in the intensity of their development.

Parchevskiy, V.
INVESTIGATION OF THERMAL VERTICAL CURRENTS. 17 Dec 59, 9p. (2 figs omitted) 4 refs. JPRS Trans: L-604-N.
Order from OTS $0.50 59-13165

Trans. of Meteorologiya i Gidrologiya (USSR) 1958, no. 5, p. 26-29.

The streams of vertical currents which occur under individual clouds and groups of clouds of vertical development or which develop within such clouds and also similar vertical currents which do not reach the level of condensation are discussed. Investigations were based on visual observations made during glider competitions organized in the Polish Peoples Republic in 1951-1954 and also the results of an analysis of synoptic maps. Use was made of data of aircraft sounding of the atmosphere approximately to the level of 4 kilometers, supplemented to an insignificant extent by the data of radiosonde ascents made at points situated close by.

Rakipova, L. R.
RESEARCH ON THE TRANSFER OF ANGULAR MOMENTUM IN THE ATMOSPHERE. 19 Mar 59, 13p. (3 figs. omitted) 50 refs. JPRS: L-702-N.
Order from OTS $0.50 59-13327

Trans. of Meteorologiya i Gidrologiya (USSR) 1958, no. 11, p. 56-61.

Shishkova, I. A.
PROBLEM OF THE PROGNOSIS OF THE TRAJECTORIES OF AIR PARTICLES [K Voprosu o Prognoze Trayektoriy Vozdushnykh Chastits]. 16 Dec 58, 8p. 3 refs. JPRS Trans. L-544-N.
Order from OTS $0.50 59-13148

Trans. of Meteorologiya i Gidrologiya (USSR) 1958, no. 4, p. 8-14.

A method is described for plotting 12-hr forecastable trajectories (more accurately their horizontal projections) from data of one initial AT map on the basis of calculated fields of local accelerations.

Yepyat'yev, M. N.
FOG DIAGNOSIS AND FORECAST. 24 Feb 59, 7p. JPRS: L-651-N.
Order from OTS $0.50 59-13216

Trans. of Meteorologiya i Gidrologiya (USSR) 1958, no. 6, p. 25-29.

Geodesy

IZVESTIYA VYSSHIKH UCHEBNYKH ZAVEDENIY. GEODEZIYA I AEROFOTOS"YEMKA (USSR) 1958, NO. 1, P. 3-171 (News of Institutes of Higher Learning, Geodesy and Aerial Photography). [1959] 1v. SOV-154-58-1-(1-22)/22.
Order from OTS $0.70, $4/6 issues PB 141 007T-2

Consists of abstracts in English.

IZVESTIYA VYSSHIKH UCHEBNYKH ZAVEDENIY. GEODEZIYA I AEROFOTOS"YEMKA (USSR) 1958, NO. 2, P. 3-126 (News of Institutes of Higher Learning, Geodesy and Aerial Photography). [1959] 1v. SOV-154-58-2-(1-22)/22.
Order from OTS $0.70, $4/6 issues PB 141 007T-1

Consists of abstracts in English.

Afanas'yev, A. N.
CONFERENCE ON SUBTERRANEAN WATERS AND ENGINEERING GEOLOGY OF EASTERN SIBERIA (NO. 2). 19 Mar 59, 3p. JPRS: L-703-N.
Order from OTS $0.50 59-13328

Trans. of Meteorologiya i Gidrologiya (USSR) 1958, no. 11, p. 68-69.

Konoplyantsev, M. A.
THE RELATIONSHIP BETWEEN EXPLORATION, SURVEYING, AND PROSPECTING. 5 Mar 59, 2 refs. JPRS: L-679-N.
Order from OTS $0.50 59-13279

Trans. of Razvedka i Okhrana Nedr (USSR) 1958, [v. 24] no. 9, p. 11-14.

Surveying, prospecting and exploring operations are all concerned with the discovery, description and evaluation of mineral deposits. The instructions and textbooks available in the Union very often give contradictory definitions of the precise task of each operation. The development of new instructions, which will determine and synchronize with precision all these operations is urgently needed.

Geography

VSESOYUZNOYE GEOGRAFICHESKOYE OBSHCHESTVO. IZVESTIYA (USSR) 1958, V. 90, NO. 6, P. 497-575 (News of the All-Union Geographical Society) [1959] [18]p. SOV-12-90-6-(1-23)/23.
Order from OTS $0.50, $3.00/year PB 141 006T-4

Consists of abstracts in English.

Yusov, B. B.
TIBET: PHYSICAL-GEOGRAPHIC CHARACTERISTICS, ed. by E. M. Murzayev. 21 Apr 59, 197p. 39 refs. JPRS 670-D.
Order from OTS $3.00 59-11519

Trans. of mono. pub. by State Publishing House for Geographical Literature, Moscow, 1958, p. 1-224.

Characteristics of the surface structure of Tibet and types of relief are given. Also examined are characteristics of the climate, hydrography, vegetation, and animal world, and physical-geographic regions are delineated and described. The book is of interest not only to geographers and naturalists (botanists, zoologists, climatologists, but also to laymen, since it informs us about one of the least studied regions of the globe.

MOSKOVSKOYE OBSHCHESTVO ISPYTATELEY PRIRODY BYULLETEN'. OTDEL GEOLOGICHESKIY (USSR) 1958, VOL. 33[63] NO. 1, P. 3-160 (Bulletin of the Moscow Society of Naturalists, Geological Division). [1958] [22]p. SOV-5-33-1-(1-25)/25.
Order from OTS $0.50, $3.00/year PB 141 000T-4

Consists of abstracts in English.

Afanas'yev, G. D.
ON SOME GEOLOGICAL PROBLEMS OF PETROLOGY. 7 Apr 59, 29p. 42 refs. JPRS L-1602-D.
Order from OTS $0.50 59-11489

Trans. of Akademiya Nauk SSSR. Izvestiya. Seriya Geologicheskaya 1957 [v. 22] no. 11, p. 32-49.

Antropov, P. Ya.
THE MAIN PROBLEMS OF GEOLOGICAL PROSPECTING AND EXPLORATION SURVEYS OF OIL AND GAS IN 1959-1965. 9 Apr 59, 12p.
JPRS: L-1604-D.
Order from OTS $0.50 59-11491

Trans. of *Geologiya Nefti i Gaza (USSR) 1959 [v. 3] no. 1, p. 1-8.

Gordeyev, D. I.
THREE YEARS OF INTERNATIONAL SCIENTIFIC RELATIONS IN THE FIELD OF GEOLOGY.
30 Mar 59, 4p., JPRS L-1582-D.
Order from OTS $0.50 59-11478

Trans. of Nauchnyye Doklady Vysshey Shkoly. Geologo-geograficheskiye Nauki (USSR) 1958, no. 1, p. 269-270.

Kobets, N. V. and Komarov, B. V.
SOME QUESTIONS OF AERIAL METHODS OF SEARCHING FOR DIAMOND DEPOSITS IN SITU. [1958] 6p. (4 figs. omitted) 3 refs.
Order from LC or SLA mi$1.80, ph$1.80 59-10601

Trans. of Akademi[ya] Nauk SSSR. Izvestiya. Ser[iya] Geol[ogicheskaya] 1958, no. 2, p. 85-93.

A method of aerial survey in the search for kimberlite pipes is described and the expediency of collaborative studies by the methods of geophysics and aerial survey is pointed out.

Kozhevnikov, I. I.
THE TECTONICS AND OIL AND GAS POSSIBILITIES OF THE NORTHERN PART OF THE TERRITORY OF NORTH CASPIAN DEPRESSION. 9 Apr 59, 12p. (1 graph, 3 figs. omitted) 5 refs.
JPRS: L-1607-D.
Order from OTS $0.50 59-11494

Trans. of *Geologiya Nefti i Gaza (USSR) 1959 [v. 3] no. 1, p. 18-25.

Miranov, S. I.
SOVIET OIL GEOLOGY FOR 40 YEARS. 7 Apr 59, 10p. 1 ref. JPRS L-1601-D.
Order from OTS $0.50 59-11488

Trans. of Akademiya Nauk SSSR. Izvestiya. Seriya Geologicheskaya 1957 [v. 22] no. 11, p. 8-14.

Polyakov, S. S. and Sergeyev, Ye. M.
ENGINEERING-GEOLOGICAL CHARACTERISTICS OF THE VALLEY OF THE LOWER OB' RIVER. 30 Mar 59, 12p. (1 fig. omitted) 1 ref. JPRS L-1581-D.
Order from OTS $0.50 59-11477

Trans. of Nauchnyye Doklady Vysshey Shkoly. Geologogeograficheskiye Nauki (USSR) 1958, no. 1, p. 124-132.

Rostovtsev, K. O.
SOME NEW DATA ON THE STRATIGRAPHY OF THE TRIASSIC DEPOSITS OF THE NAKHICHEVAN A.S.S.R. tr. by J. H. Bradley. [1958] 5p. 11 refs. [GSC unedited Trans. no. 10].
Order from LC or SLA mi$1.80, ph$1.80 59-10363

Trans. of Akademiya Nauk SSSR. Doklady, 1958, v. 123, no. 1, p. 156-158.

The data presented suggest a scheme for subdividing the Triassic stratigraphy.

Shcherbakov, D. I.
SOVIET GEOLOGY FOR 40 YEARS. 7 Apr 59, 8p.
JPRS L-1600-D.
Order from OTS $0.50 59-11487

Trans. of Akademiya Nauk SSSR. Izvestiya. Seriya Geologicheskaya 1957 [v. 22] no. 11, p. 3-7.

Shpil'man, I. A.
SOME PROSPECTING FEATURES OF BURIED STRUCTURES. 9 Apr 59, 7p. (6 figs. omitted)
JPRS: L-1608-D.
Order from OTS $0.50 59-11495

Trans. of *Geologiya Nefti i Gaza (USSR) 1959 [v. 3] no. 1, p. 33-38.

Vol'fson, F. I., Kreyter, V. M. and Lukin, L. I.
MAIN RESULTS OF STUDYING STRUCTURES OF ORE FIELDS AND DEPOSITS IN THE USSR.
7 Apr 59, 36p. (8 figs. omitted) 112 refs.
JPRS L-1603-D.
Order from OTS $1.00 59-11490

Trans. of Akademiya Nauk SSSR. Izvestiya. Seriya Geologicheskaya 1957 [v. 22] no. 11, p. 58-81.

Yerofeyev, N. S. and Vasilyev, V. G.
TO INCREASE THE SEARCH AND PROSPECTING OF NEW GAS FIELDS. 9 Apr 59, 8p. JPRS: L-1605-D.
Order from OTS $0.50 59-11492

Trans. of *Geologiya Nefti i Gaza (USSR) 1959 [v. 3] no. 1, p. 9-13.

Zagarmistr, A. M. and Berdichevskiy, M. N.
ELECTRIC PROSPECTING BY THE TELLURIC CURRENTS METHOD. 9 Apr 59, 13p. (8 figs. omitted) 2 refs. JPRS: L-1609-D.
Order from OTS $0.50 59-11496

Trans. of *Geologiya Nefti i Gaza (USSR) 1959 [v. 3] no. 1, p. 38-47.

Zubov, I. P.
THE PROBLEMS OF OIL AND GAS PROSPECTING SURVEYS IN CENTRAL ASIA. 9 Apr 59, 7p. JPRS: L-1606-D.
Order from OTS $0.50 59-11493

Trans. of *Geologiya Nefti i Gaza (USSR) 1959 [v. 3] no. 1, p. 13-17.

Mineralogy

Rachkovskiy, S. Ya. and Shabel'nikov, G. P.
PRINCIPLES OF APPRAISING MINERAL DEPOSITS AND MINES (Osnovy Otsenki Mestorozhdeniy Poleznykh Iskopayemykh i Rudnikov). 22 Apr 59, 8p. 1 ref. JPRS: L-735-N.
Order from OTS $0.50 59-13421

Trans. of Gornyy Zhurnal (USSR) 1959, no. 12, p. 5-6, 9-10.

Contents:
The tasks and methods of appraising deposits, by S. Ya. Rachkovskiy
The formula for appraising deposits, by G. P. Shabel'nikov

Sukhanov, A. F.
SINGLE CLASSIFICATION OF ROCKS IN REGARD TO THEIR BEHAVIOUR TO BLASTING AND A NEW METHOD OF COMPUTING EXPLOSIVE CHARGES (Yedinaya Klassifikatsiya Gornykh Porod po Vzryvayemosti i Novyy Metod Rascheta Zaryadov Vzryvchatykh Veshchestv). Mar 57 [8]p. C. T. S. no. 282.
Order from LC or SLA mi$1.80, ph$1.80 59-10439

Trans. of Gornyy Zhurnal (USSR) 1955, no. 6, p. 31-35.

A new theory for the blasting of rock craters is presented. The quality of the loosening charge should be judged both by the quantity and extent of fragmentation (because of the size and efficiency of the charge). The power index (crater radius : depth) of the loosening charge is usually equal to or less than 1, but may be greater than 1. Crater radius represents an amount of charge, according to its depth and power index. The amount depends on specific gas pressure and varies directly with the angle of the crater orifice and the weight of loosened rock. Cohesive forces decrease in resistance to the explosion as the angle increases because the disruptive forces become more predominating over shearing forces. With equal crater depths, crater volumes are related according to the square of the tangents of their orifice angles, and crater surfaces according to the quotient of the tangents and cosines. A formula is developed for the total weight of charge Q (allowing for any extent of fragmentation): $Q = f(d)\ (q_1 S + q_2 V)$, where f(d) is a coefficient of degree of rock disintegration, q_1 is the amount of explosive expended in loosening rock from 1 sq m of crater surface, q_2 is the amount of explosive per 1 cu m of rock to be shattered, S is the crater surface, and V the crater volume. A shattering charge is not equal to a third the charge of normal projection because of the differences in rock density and cohesive force. The consumption of explosives is less in the simultaneous rather than the consecutive firing of charges. The distribution of explosive energy in relation to the forces of resistance of the rocks can be calculated.

Vasil'yeva, Z. V. and Kudryashova, V. I.
APATITE FROM THE SIBERIAN TRAP FORMATIONS [Apatit iz Sibirskoy Trappovoy Formatsii]. [1958] 5p. [5 illus. omitted] 5 refs.
Order from LC or SLA mi$1.80, ph$1.80 59-10597

Trans. of [Akademiya Nauk SSSR]. Izvestiya. [Seriya Geologicheskaya] 1958, no. 7, p. 92-[97].

Apatite is a constant accessory mineral in trappean rock formations. Apatite of post-magmatic origin was never found in traps until recently. One of the authors discovered crystals of apatite in a hydrothermal vein in the region of the Nizhnyaya Tunguska river. Other apatite crystals were also found in this region. Their characteristics are described in detail. In other regions of Siberia, A. P. Lebedev and N. V. Pavlov also discovered apatite crystals. Chemical analysis showed that the content of rare earths in apatites from the hydrothermal vein was from 2.13 to 0.90% and no rare earths were found in other apatites located in metasomatically changed lava covers or in the magnetite deposits.

Seismology

Alekseyev, A. S. and Tsepelev, N. V.
INTENSITY OF REFLECTED WAVES IN A STRATIFIED-HETEROGENEOUS ELASTIC MEDIUM. [1958] 19p. 9 refs.
Order from LC or SLA mi$2.40, ph$3.30 59-10598

Trans. of Akad[emiya] Nauk SSR. Izvestiya. Seriya Geofizicheskaya, 1956, no. 9, p. 1021-1035.

Formulas known in the case of a multilayer, elastic medium with flat parallel boundaries of separation and forms of inscription of reflected waves in the case of heterogeneous layers with curvilined boundaries of separation are generalized on the basis of energy considerations. The multiplier entering in the formulas and determining the geometric separation of the waves, is calculated for the case of sufficiently thick parallel layers with a vertical gradient of elastic characteristics. One example of calculation of the intensity of reflected waves in such a medium is given.

Oblogina, T. I.
DIFFRACTED SEISMIC WAVES. [1959] 14p.
Order from ATS $16.25 ATS-73L29R

Trans. of Priklad[naya] Geofiz[ika] (USSR) 1958, no. 20, p. 26-45.

ENGINEERING

RAZVEDKA I OKHRANA NEDR (USSR), 1958 [V. 24] NO. 11, P. 1-64 (Exploration and Conservation of Natural Resources). [1959] [11] p. SOV-132-58-11-(1-17)/17.
Order from OTS $0.50, $3/6 issues PB 141 135T-9

Consists of abstracts in English.

RAZVEDKA I OKHRANA NEDR (USSR), 1958 [V. 24] NO. 12, P. 1-58 (Exploration and Conservation of Natural Resources). [1959] [9]p. SOV-132-58-12-(1-14)/14.
Order from OTS $0.50, $3/6 issues PB 141 135T-10

Consists of abstracts in English.

TEKHNIKA MOLODEZHI (USSR) 1958, V[26] NO. 9, P. 1-40 (Engineering for Youth). [1959] 1v. SOV-29-58-9-(1-30)/30.
Order from OTS $0.50, $6.00/year PB 141 024T-7

Consists of abstracts in English.

Denisov, F. I.
INDEXES OF PRODUCTION DECLINE IN WELLS AFTER HYDRAULIC FRACTURING. [1959] 5p.
Order from ATS $7.55 ATS-90L30R

Trans. of Neftyanoye Khoz[yaystvo] (USSR) 1958, v. 36, no. 7, p. 52-55.

Dorozhkin, V. S., Zheltov, Yu. V., and Zheltov, Yu. P.
MOVEMENT OF FLUID-SAND MIXTURE IN A WELL AND IN A FRACTURE IN HYDRAULIC FRACTURING OF AN OIL-BEARING FORMATION. [1959] 7p.
Order from ATS $9.40 ATS-66L30R

Trans. of Akad[emiya] Nauk SSSR. Otdel[eniye] Tekh[nicheskikh] Nauk. Izvest[iya] 1958, no. 11, p. 37-42.

Mamsurov, L. A. and Rafiyenko, D. I.
ABATAGE DU MINERAI PAR TROU DE MINE DE FAIBLE DIAMÈTRE DANS L'EXPLOITATION DES FILONS [Blasting of Ores by a Blast Hole of Small Diameter in the Exploitation of Veins] tr. by T. Amilakvari and A. Ginocchio. 7 Oct 58 [8]p. Trans. no. R 482 (text in French).
Order from LC or SLA mi$1.80, ph$1.80 CEA-tr-R482

Trans. in French of Gornyy [Zhurnal] (USSR) 1958, [no. 1] p. 32-34.

The use of cutting tools equipped with plain bits 25 to 30 mm in diameter instead of the customary 46mm nearly doubles drilling speeds. Blast holes of reduced diameters allow a 40 to 70% reduction of compressed air consumption, as well as reduced consumption of explosives. The use of powerful nitrate explosives in 22mm cartridges is recommended.

Trawinski, H.
HYDROCYCLONES IN ORE DRESSING (Hydrozyklone in der Erdaufbereitung). 12 Sep 57, [18]p. 26 refs. Tr57-137.
Order from SLA mi$2.40, ph$3.30 59-10640

Trans. of Chemie-Ing[enieur]-Techn[ik] (West Germany) 1955, v. 27 [no. 1] p. 13-17.

Vasil'yev, Yu. N.
MECHANISM OF FRACTURE ENLARGEMENT IN HYDRAULIC FRACTURING OF CARBONATE RESERVOIRS. [1959] 7p.
Order from ATS $9.75 ATS-91L30R

Trans. of Neftyanoye Khoz[yaystvo] (USSR) 1958, v. 36, no. 6, p. 32-36.

Aeronautical Engineering

GRAZHDANSKAYA AVIATSIYA (USSR) 1958 [V. 15] NO. 10, P. 1-39 (Civil Aviation). [1959] 1v. SOV-84-58-11-(1-58)/58.
Order from OTS $0.50, $6.00/year PB 141 078T-10

Consists of abstracts in English.

Arlazorov, M.
MAN ON WINGS. 6 Apr 59, 56p. JPRS: 1423-N.
Order from OTS $1.50 59-13379

Trans. of mono. Chelovek na Kryl'yakh, Moscow, 1958, p. 221-275.

The history of aviation and the potentialities of future aircraft for space flight are discussed in popular terms. Russian achievements include the first powered flight by Mozhayskiy in 1882, the first parachute catapult ejection in 1947, the TU 104 designed by Tupolev, intercontinental ballistic missiles, and the pioneer work of Tsiolkovskiy which led to the development of the sputniks.

Dudenhausen, H. J.
THREE AXES FLIGHT CONTROL SYSTEM FOR HIGH PERFORMANCE AIRCRAFT WITH INTEGRATING RATE GYROSCOPES AS THE MAIN MEASURING ELEMENTS (Dreiachsen-Flugregelung flir Hochleistungsflugzeuge mit Integrations-Wendekreiseln Als Hauptrichtgeber) tr. by R. C. Murray. June 58 [25]p. Library Trans. 741.
Order from SLA mi$2.70, ph$4.80 59-10056

Trans. of Luftfahrttechnik (West Germany) 1958, v. 4, no. 3, p. 49-59.

The basic design of an automatic pilot and its function is described with the aid of a model simulating a stabilizing system for level flight. The aerodynamic properties of an aircraft are studied for this purpose, and it is explained how these properties can be simulated in a model, so that the effect of a course flight controller on the motion of an aircraft about the z-axis can be determined. After a descrintion of the design and operation of the basic controller required for flight stabilization, its use as the basic element of a single-axis (one-dimensional) course flight control system is described, and later the extension of the principle to two-axes control for the vertical and longitudinal axes with the instruments for control-coordination in cruising and manoeuvring flight. Finally, the principle of the extension to the full three-axes automatic pilot with height control is described.

Kobrynski, M.
ON THE ACOUSTIC FIELD OF TURBO REACTORS (Sur la Structure du Champ Sonore des Turbo-Réacteurs) tr. by W. F. Fielding. Oct 58 [13]p. 2 refs. Library Trans. no. 775.
Order from SLA mi$2.40, ph$3.30 59-10320

Trans. of La Recherche Aéronautique (France) 1957, no. 58, p. 29-35.

Details are given of a study of the characteristics of the acoustic field, produced by turbo-reactors, as functions of the aerodynamic parameters of the jet. The existence of emission regions situated along the jet axis is shown, together with the directive nature of these regions. The form of the noise spectrum appears to be related to the geometrical dimensions of the jet and the shear velocity.

Chemical Engineering

CATALYSTS GIVING INCREASED SPACE-TIME YIELDS OF POLYETHYLENE. [13 Mar 59] 7p.
Order from RIS $18.75 Rept. 96965

Trans. of Belgian patent 566 910, 10 Apr 58, by Ruhrchemie A. G., Oberhausen-Holten. Priority: Patent application R 21 104 IVb/39c filed in Germany 6 May 57.

Continuous or batchwise production of olefin polymers, particularly polyethylene, using pressures below 100 atm and at temperatures up to about 100°C. is readily accomplished in the presence of catalysts which are composed of mixtures of alkylaluminum derivatives and derivatives of titanium. The Ti containing component used is a product made by reacting 1 mole of $TiCl_4$ with 1.5 to 2.5 moles of trialkylaluminum compounds such as triethylaluminum. The active precipitate should be prepared with the hydrocarbon serving as auxiliary liquid for the polymerization. The reaction begins when the 2 components are mixed, at a temperature up to 70° C., and the products are freed from the soluble organic Al compounds by repeated washings with hydrocarbons. The resulting catalyst is a black precipitate of very high activity not found in related reactions or at other proportions of this reaction. The end product has a lower ash content, and the high activity of the new catalysts makes it possible to use alkylaluminum derivatives which have lower activity in combination with differently prepared Ti compounds, such as alkylaluminum dihalides, as the second catalyst. Polymers of various molecular weights can be obtained by changing the molar ratio between the titanium compound, prepared as specified and the added organic Al compound. Olefin polymers of lower mol. wt. result from an increase in the proportion of the Ti component.

JOURNAL OF APPLIED CHEMISTRY OF THE USSR, 1958, VOL. 31, NO. 2, P. 149-312. 1959, 1v. 285 refs
Order from CB $7.50, $60.00/year

Trans. of Zhurnal Prikladnoy Khimii (USSR) 1958, v. 31, no. 2, p. 153-[323].

KHIMIYA I TEKHNOLOGIYA TOPLIV I MASEL (USSR) 1958 [V. 3] NO. 6, P. 1-72 (Chemistry and Technology of Fuels and Oils). [1958] 17p.
SOV-65-58-6-(1-13)/13.
Order from OTS $0.50, $3/6 issues PB 141 060T-6

Consists of abstracts in English.

NAUCHNYYE DOKLADY VYSSHEY SHKOLY. KHIMIYA I KHIMICHESKAYA TECHNOLOGIYA (USSR) 1958, NO. 1, P. 3-198 (Scientific Reports of Higher Schools. Chemistry and Chemical Technology). [1958] 1v. SOV-156-58-1-(1-46)/46.
Order from OTS $1.30, $5/4 issues PB 141 066T-1

Consists of abstracts in English.

NEFTYANIK (USSR) 1958, NO. 8, P. 1-35 (Petroleum Worker). [1959] 1v. SOV-92-58-9-(1-36)/36.
Order from OTS $0.60, $3.50/6 issues PB 141 085T-7

Consists of abstracts in English.

NEFTYANOYE KHOZYAYSTVO (USSR) 1958 [V. 36] NO. 9, P. 1-72 (Petroleum Economy). [1959] [18]p. SOV-93-58-9-(1-17)/17.
Order from OTS $0.50, $3/6 issues PB 141 086T-6

Consists of abstracts in English.

PLANT FOR PRODUCTION OF HYDROGEN CHLORIDE AND FOR ITS ABSORPTION TO OBTAIN HYDROCHLORIC ACID OR FOR DIRECT PRODUCTION OF HYDROGEN CHLORIDE IN COOLED STATE. 3 Mar 59, 5p.
Order from RIS $12.00 Rept. 97011

Trans. of German patent application B 44 023 (12i, 5) DAS 1 035 626, by Badische Anilin- & Soda-Fabrik A. G., Ludwigshafen, filed 22 Mar 57, pub. 7 Aug 58.

A plant for production of hydrogen chloride and its absorption to form hydrochloric acid, or its direct production in cooled state is described, which consists of a tower which is fed from above with an aqueous absorbent, while the gases to be absorbed pass through from below. In the absence of intermediate connecting lines, a combustion chamber for the production of hydrogen chloride is arranged above a heat exchanger adjacent to the base of the tower. Above the burners in this chamber there is provided a bell-shaped chamber equipped with openings for efflux of resultant hydrogen chloride into the absorption zone of the tower, and the combustion chamber is cooled by the hydrochloric acid descending from the absorption zone of the tower surmounting it.

PROCESS FOR ACCELERATED ISOCYANATF FORMATION. [10 Oct 58] 4p.
Order from RIS $7.00 RIS-96507

Trans. of German patent application F 17 783 (12o, 22) by Farbenfabriken Bayer A. G., Leverkusen, filed 7 May 53, pub. 26 Apr 56.

The rate of formation of isocyanates produced by reaction of phosgene with primary amines was accelerated by continuously passing the reactants from below through a vertical heated tube in the presence of a solvent or suspending agent. The phosgene, which tends to escape because of the temperature rise, is held in solution by the pressure of the liquid column in the tube. The higher phosgene concentration thus produced has an accelerating effect upon the reaction. Moreover, the resulting hydrogen chloride which impedes the reaction, unless removed, is allowed to escape, because the liquid pressure decreases as the reaction ascends in the tube. The solvent escaping in gaseous form from the reaction towers may be condensed and reintroduced into the towers from below The continuous process achieves higher and faster yields of isocyanates than the conventional kettle process.

PROCESS FOR INDUSTRIAL PRODUCTION OF ALKYL-SUBSTITUTED ω-CHLOROSTYRENES. [20 Mar 59] 4p.
Order from RIS $5.75 Rept. 97008

Trans. of German patent application D 19 282 (12o, 19/02) DAS 1 034 622, by Deutsche Gold- u. Silber-Scheideanstalt, Frankfurt, filed 8 Dec 54, pub. 24 July 58.

A new process is described for the industrial production of alkyl-substituted ω-chlorostyrenes. The chlorostyrenes are obtained in yields above 85% from chloromethyl-phenyl-carbinol or homologs thereof alkylated in the nucleus, or in the side chain if the carbinols are heated in the liquid phase with small amounts of an organic or inorganic acid such as sulfuric acid. The chlorostyrenes are used as deodorants and as intermediates for the production of plastics, pharmaceuticals, and pesticides. The process is also applicable to chlorohydrins which bear alkyl substituents in the phenyl nucleus and/or in the side chain.

PROCESS FOR PRODUCING HIGHEST-PURITY SILICON OR GERMANIUM. [27 Mar 59] 4p.
Order from RIS $8.75 RIS-97014

Trans. of German patent application K 32 451 (12i, 38) DAS 1 044 781, by Kali-Chemie A. G., Hannover, filed 17 June 57, pub. 27 Nov 58.

SiH_4 or GeH_4 containing B, Ar, Sb, or similar impurities, is passed through a suspension of alkali hydride and an organic compound of Group III of the periodic system, and then subjected to pyrolysis. The Group III elements, which act as catalysts, may be alumino-organic compounds such as trialkylaluminums, alkylaluminum hydrides, or alkylaluminum alcoholates About 5 to 10 mol% of these compounds is required, and a faster reaction at lower temperatures may be obtained with larger amounts. Near catalytic amounts used at a reaction temperature of more than 60° C yield the highest purity Si. The organic compound of the Group III element is prepared by reaction in the suspension, and the reaction is speeded by employing a finely divided alkali hydride. Suspending agents are used which do not react with other components, such as aliphatic and aromatic hydrocarbons, alkylsilanes, and other solvents. From 500° to 1400° C. is a sufficient decomposition temperature for SiH_4, and about

500° to 1200° C.is required for GeH_4. Boron impurities are removed by reaction with the catalyzed NaH to form $NaBH_4$ or with the catalyst, $AlBR_3$, which reacts immediately with the alkali hydride to form the complex $NaHBR_3$, which precipitates out. The reactions are carried out in a series of reactors, the last of which is not supplied with catalyst. The Si or Ge should be precipitated on Si or Ge previously brought to a high state of purity.

PROCESS FOR PRODUCING TRIHYDROXYMETHYLPHOSPHINE. [24 Oct 58] 10p.
Order from RIS $17.00 RIS-96947

Trans. of German patent application F 22 199 (12o, 26/01) DAS 1 035 135, by Farbwerke Hoechst A. G., Frankfurt, filed 23 Jan 57, pub. 31 July 58.

Phosphorus compounds bearing hydroxymethyl groups on the phosphorus were prepared by reacting 1 mole of formaldehyde with 1/3 mole of P. The reaction was carried out in water with the addition of small amounts of finely divided metals (not including alkali or alkaline earth metals) which react with phosphine or its reaction products. The same compound was also obtained by reacting 1 mole of tetrahydroxymethylophosphonium hydroxide, made from phosphine and 4 moles of formaldehyde, with 1/3 mole of phosphine in the presence of the prescribed catalysts. Metals of Groups II and III, such as the salts, hydroxides, and oxides were preferred as catalysts, especially Pt salts and hydroxides, simple or complex. Water soluble organic solvents were added to the reaction, which proceeds at about room temperature. After reaction, the catalyst was separated by filtration, and the solvents were distilled off, usually with mild heat and vacuum. The crystallized product represents the previously unknow trihydroxymethylphosphine, and it is soluble in water and methanol. It is useful in pest control, flameproofing of wood and textiles, and a lubricant additive.

PRODUCTION OF ETHANOL OR ISOPROPANOL. [20 Mar 59] 8p.
Order from RIS $20.50 Rept. 96988

Trans. of German patent application F 21 625 (12o, 5/02) DAS 1 035 632, by Farbwerke Hoechst A. G., Frankfurt, filed 9 Nov 56, pub. 7 Aug 58.

Ethanol or isopropanol are economically produced from ethylene and propylene by absorbing the olefin in 65 to 75% H_2SO_4, preferably 68 to 72%, under pressures of 10 to 50 atm and at temperatures between 70 to 110° C. for propylene and 140 to 160° C. for ethylene. A small amount of water, not exceeding the amount of alcohol present, is then added to the absorbate, and the hydrolyzate obtained is subjected to a 2-stage vacuum stripping without distillate reflux. The pressures should not exceed 50 to 300, and 70 to 150 mm Hg are preferred, with a still temperature of about 100° C. for the first stripper. About 15 to 30 mm Hg and about 110° C. are used in the second stripper. A fluted corrosion resistant pressure column in which an H_2SO_4 acid of appropriate concentration is run countercurrent to the olefin gas is used to produce the olefin absorbates. The equipment used is described, and the results obtained from various olefin absorbates in the system are summarized by 3 examples. Tables are given to show data on feed stock, operation of the strippers, and alcohol and end-acid concentrations.

RARE EARTH CATALYSTS FOR THE LOW-PRESSURE POLYMERIZATION OF OLEFINS. [16 Jan 58] 8p.
Order from RIS $21.00 RIS rept. 96961

Trans. of Belgian patent 563 591, 28 Dec 57, by Farbwerke Hoechst A. G., Frankfurt. Priority: patent application F 22 031 IVb/39c, filed in Federal Republic of Germany, 28 Dec 56.

A process is described for the polymerization of olefins under low pressure in the presence of catalysts. Compounds of elements of Group III B of the periodic system with atomic numbers between 21 and 71 are used as polymerization catalysts in conjunction with reducing and alkylating substances of Groups I III and IVA of the periodic system.

Andreyev, E. A., Andryanova, T. I. and others. AN INVESTIGATION, USING C^{14}, OF THE SECONDARY REACTIONS OF CATALYTIC CRACKING OF HYDROCARBONS. [1959] 5p.
Order from ATS $6.60 ATS-84L30R

Trans. of Akad[emiya] Nauk SSSR. Doklady, 1955, v. 102, no. 6, p. 1119-1122.

Carlson, G., Moden, H. and Scholander, A. ALCOHOL PRODUCTION AT MO OCH DOMSJO AB: SOME SPECIAL FEATURES AND TECHNICAL STUDIES ON PRODUCTION. [1958] [26]p. 11 refs. [7 figs. omitted].
Order from SLA mi$2.70, ph$4.80 59-10162

Trans. of Svensk Pappers-Tidning (Sweden) 1958, v. 61 [no. 18B] p. 815-826.

Claes, François and Jungers, Joseph C. QUANTITATIVE KINETICS IN HETEROGENEOUS CATALYSIS. DEHYDROGENATION OF SECONDARY ALCOHOLS ON NICKEL. [1959] 30p. 5 refs. No. 203.
Order from SLA mi$2.70, ph$4.80 59-10566

Trans. of Soc[iété] Chim[ique de France]. Bull[etin] 1958 [no. 8-9] p. 1167-1174.

A study is made of the dehydrogenation, catalyzed by Raney nickel, of a certain number of secondary alcohols, alone or in pairs, in the presence of their reaction product, foreign ketones, and of various solvents or inhibitors. The analysis of the results leads to the values of the relative reactivities and to the ratios of the adsorption coefficients between the reactants and the products or between the coreactants in a system of homogenous values. The dehydrogenation of alcohols constitutes therefore, like the

hydrogenation of aromatics, an ideal case of catalysis. The presence of foreign substances alters the kinetics of the transformation by changing the absolute value of the rate of reaction without affecting the ratio of the adsorption coefficients.

Dahlen, Allan and Bengtsson, Erik.
BIPHENYL, ITS PROPERTIES, USE AND MANUFACTURE. [1958] 9p.
Order from SLA mi$1.80, ph$1.80 59-10922

Trans. of Iva (Sweden) 1948, v. 19, p. 134-139.

Gernet, E. V.
COMPARISON OF RETAINING CAPACITIES OF VARIOUS FILTERS IN THE GRAVIMETRIC DETERMINATION OF THE CONCENTRATION OF SMOKE. [1959] 7p. (3 figs. omitted) 7 refs.
Order from LC or SLA mi$1.80, ph$1.80 59-10185

Trans. of Gig[iyena] i Sanitariya (USSR) 1958, v. 23, no. 2, p. 77-83.

Ashless filter papers or porous glass filters are the most suitable for the collection of samples in the determination of the concentration by weight of smoke. Filter papers are specially convenient, since in many cases during the determination of the substances they can be burnt. This reduces considerably the potential error due to the desorption from the filtering substance. Cotton-wool filters, porous glass plates and Gernet and Richter's LIQUID ABSORBENTS allow to escape a considerable amount by weight of particles and cannot be recommended for the collection of samples of very fine smoke.

Grotjahn, H.
THE KINETICS OF CELLULOSE XANTHATE FORMATION. [1958] [25]p. 20 refs.
Order from SLA mi$2.70, ph$4.80 59-10150

Trans. of Zeitschrift für Elektrochemie (West Germany) 1953, v. 57, no. 4, p. 305-317.

The velocity of xanthation of alkali-cellulose (Na-cellulose I) with gaseous CS_2 was measured in a vacuum-glass apparatus. The total CS_2 uptake as well as the rate of formation of xanthate and of byproducts were separately determined. All the rate of reaction curves obtained could be represented assuming second order kinetics. In these reactions, the determining variables are the CS_2, pressure of the system and the amount of NaOH in the alkali-cellulose. The rate controlling factor for the total CS_2 uptake is an intermediate reaction between CS_2 and NaOH, which presumably results in the formation of dithiocarbonate. From this product the xanthate and byproducts are then formed. The influence of temperature on this reaction can be predicted from Arrhenius's equation assuming an energy of activation of 12.2 kcal/mol. The reaction is not influenced by the velocity of diffusion of CS_2 inside the fibres, however the solubility of CS_2 in alkali-cellulose and in the NaOH adhering to the fibres is of major importance. The appearance of this solubility coefficient in the velocity equation points to a diminution of the rate of the reaction with increasing concentration of the steeping caustic. The connection between the main reaction and side reactions has been discussed in conjunction with considerations regarding the kinetics and the chemical equilibrium and a reaction scheme formulated which takes into account the entire phases of the chemical transformations. The results of earlier investigations on the kinetics of xanthation are reviewed critically in connection with the new findings.

Hock, H. and Kropf, H.
AUTOXIDATION OF HYDROCARBONS. XXII [2]. THE REACTION OF α-CUMYL HYDROPEROXIDE WITH LEAD TETRAACETATE. [1959] 8p.
Order from ATS $12.35 ATS-04L30G

Trans. of Chem[ische] Ber[ichte] (West Germany) 1958, v. 91, p. 1681-1687.

Hoppe, Alfred.
THE UREA-DEWAXING PLANT IN HEIDE. [1958] [16]p. 3 refs.
Order from SLA mi$2.40, ph$3.30 59-10568

Trans. of Erdöl und Kohle (West Germany) 1958, v. 11, no. 9, p. 618-621.

The urea-dewaxing plant of the Deutsche Erdoel A. G., Erdoelwerke Holstein, Heide, has been operating for almost four years. The plant was built by the Edeleanu Gesellschaft m. b. H., Frankfurt/Main, using the basic patents held by the Badische Anilin- & Soda-Fabrik A. G. (See G. P. 869,070.) The basic principles of the process, and the first year of operation of the Heide plant, have already been reported (Erdöl und Kohle 8: 411, 1955).

Kolesnikov, G. S. and Klimentova, N. V.
TRIBUTYLBORE-CATALYSEUR DE POLYMÉRISATION DE COMPOSÉS NON SATURÉS [Tributyl Boron: Catalyst for Polymerization of Non-saturated Compounds] tr. by B. de Trezvinsky. 10 May 58 [4]p. 2 refs. Trans. no. R 365 (text in French).
Order from LC or SLA mi$1.80, ph$1.80
CEA-tr-R365
Trans. in French of *Ak[ademiya] Nauk SSSR. [Otdeleniye Khimicheskikh Nauk] Izv[estiya] 1957, no. 5, p. 652-653.

De cette manière, nous avons établi que le tributylbore est un catalyseur très efficace pour la polymérisation des composés non saturés, tels que le styrolène et le méthacrylate de méthyle. D'autres dérivés alcoyliques du bore possèdent, sans doute, l'action catalytique semblable, de même les monomères indiqués ne sont pas toutes les substances non saturées aptes à être polymérisées sous l'action du tributylbore et d'autres dérivés alcoyliques du bore.

Korshak, V. V.
THE BASIC STAGES IN THE DEVELOPMENT OF THE CHEMISTRY OF HIGH MOLECULAR COMPOUNDS IN FORTY YEARS. [1959] 19p.
Order from ATS $22.65 ATS-56L30R

Trans. of Uspekhi Khim[ii] (USSR) 1957, v. 26, no. 11, p. 1295-1309.

Krevelen, D. W. van.
ADVANCES IN THE KNOWLEDGE OF TECHNICAL REACTION GUIDANCE. [1959] 16p. (10 figs. omitted) 26 refs.
Order from SLA mi$2.40, ph$3.30 59-10736

Trans. of Chemie-Ingenieur-Technik (West Germany) 1958, v. 30, no. 9, p. 553-559.
Other translations available from ATS $12.50 as ATS-06L29G [1959] 16p. and SLA mi$2.70, ph$4.80 as 59-10567 [1958] 22p.

For abstract see 59-10567 below.

Krevelen, D. W. van.
PROGRESS IN OUR KNOWLEDGE ABOUT PROCESS ENGINEERING (TECHNIQUE OF CONDUCTING CHEMICAL REACTIONS). [1958] [22]p. (refs. omitted).
Order from SLA mi$2.70, ph$4.80 59-10567

Trans. of Chemie-Ingenieur-Technik (West Germany) 1958, v. 30, no. 9, p. 553-559.
Other translations available from ATS $12.50 as ATS-06L29G [1959] 16p. and SLA mi$2.40, ph$3.30 as 59-10736 [1959] 16p.

The influence of mixing effects on the course of chemical reactions, the inhibition by the rate of mass transport of heterogenous reactions, and the problem of the stability of reactors are discussed to present newly acquired information in the field of "reaction technique" (the technique used to conduct chemical reactions, in particular on a large scale).

Krongauz, V. A. and Bagdasar'yan, Kh. S.
THE RADIOLYSIS OF SOLUTIONS OF TERT. BUTYL-PEROXIDE [Radioliz Rastvorov Perekisi Tretichnogo Butila]. [1959] 2p. 3 refs.
Order from LC or SLA mi$1.80, ph$1.80 59-10261

Trans. of Zhurn[al] Fiz[icheskoy] Khim[ii] (USSR) 1958, v. 32, no. 3, p. 717.

Kutsenko, A. I. and Lyubomilov, V. I.
PREPARATION OF 2-ETHYLHEXANOL-1 BY CONDENSATION OF n-BUTANOL. [1959] [11]p. (1 illus. omitted) 15 refs.
Order from LC or SLA mi$2.40, ph$3.30 59-10176

Trans. of Zhurnal Prikladnoy Khimii (USSR) 1958, v. 31, no. 9, p. 1419-1426.

A method has been developed for the preparation of 2-ethylhexanol-1 in a yield of up to 82.0% by condensation of n-butanol in the presence of caustic soda and commerical hydrogenating catalyst, nickel on chromia, while distilling off the reaction water and combining into a single process the reaction of making the alcoholate and the reaction of condensation. Pure 2-ethylhexanol-1 was obtained by catalytic hydrogenation and subsequent fractionation of the reaction product.

Läuger, P., Martin, H., and Müller, P.
CONSTITUTION AND TOXIC ACTION OF NATURAL AND NEW SYNTHETIC INSECTICIDES (Über Konstitution und toxische Wirkung von natürlichen und neuen synthetischen insektentötenden Stoffen). [1959] [49]p. 9 refs. (Foreign text included) Trans. no. 3389.
Order from SLA mi$3.30, ph$7.80 59-10822

Trans. of Helvetica Chimica Acta (Switzerland) 1944, v. 27, p. 892-928.

Multanovskaya, N. S.
THE SEARCH FOR THE MEANS OF IMPROVING THE FIXATION OF THERMOCOLORS ON IMPRESSIONS. 8 Apr 59, 20p. (7 figs. omitted) 4 refs.
JPRS: L-719-N.
Order from OTS $0.75 59-13364

Trans. of [Vsesoyuznyy Nauchno-Issledovatel'skiy Institut Poligraficheskoy Promyshlennosti i Tekhniki]. Sbornik Nauchnykh Rabot (USSR) 1956, v. 7, p. 103-119.

Multanovskaya, N. S.
THERMOCOLORS (HOT PRESS INKS) FOR INTAGLIO PRINTING. 8 Apr 59, 14p. (7 figs. omitted)
JPRS: L-722-N.
Order from OTS $0.50 59-13367

Trans. of [Vsesoyuznyy Nauchno-Issledovatel'skiy Institut Poligraficheskoy Promyshlennosti i Tekhniki]. Sbornik Nauchnykh Rabot (USSR) 1956, v. 7, p. 216-228.

Padovani, Carlo.
THE CHEMICAL UTILIZATION OF METHANE. [1958] 15p.
Order from SLA mi$2.40, ph$3.30 59-10748

Trans. of Chimie et Industrie (France) 1931, Mar, special no., p. 317-324.

Palomaa, M. H.
STUDIES ON ETHER-LIKE COMPOUNDS. I. ETHER-ALCOHOLS (ALKOXYLATED ALCOHOLS) OF THE TYPE R. O. CH_2. CH_2. OH. [1958] 5p. 5 refs.
Order from SLA mi$1.80, ph$1.80 59-10687

Trans. of Chemische Berichte (Germany) 1909, v. 42, p. 3873-3878.

The previous investigation (Chemische Berichte 35: 3299, 1902) concerning the preparation of ether-like compounds of the type $R \cdot O \cdot CH_2 \cdot CH_2 \cdot OH$ is extended. Methods are given for the preparation of ethylene glycol monomethyl ether; acetic-, propionic-, butyric- and benzoic-acid esters of the monomethyl ether; ethylene glycol monoethyl ether; ethylene glycol monopropyl ether; and ethylene glycol monoallyl ether.

Petrov, A. D.
THE SYNTHETIC DETERGENT INDUSTRY ABROAD AND IN THE USSR, A DISCUSSION. [1959] 4p.
Order from ATS $8.10 ATS-57L30R

Trans. of Khim[iya] i Tekhnol[ogiya] Topliv i Masel (USSR) 1957, v. 2, no. 8, p. 1-4.

Piganiol, P.
GRAFT POLYMERIZATION. [20 Mar 59] 21p. (1 fig. omitted) 13 refs.
Order from RIS $25.00 Rept. 61045

Trans. of Kunststoffe (West Germany) 1958, v. 48, Sep, p. 398-402.

The processing techniques of graft polymerization and their primary applications are reviewed. Five types of chemical grafts, and some radiation techniques for chemical grafting are discussed. Mechanical properties of polymers are improved by graftings, as in polyvinyl chloride grafted with acrylonitrile. High degrees of grafting are often required, but are hard to attain. Advances have been made in some areas, such as increase in surface hardness, tear and scratch resistance, and aqueous or greasy soiling resistance. The costs of treatment with grafted polymers have been decreased by accelerators developed by General Electric Co. Apparatus manufactured in Europe is expected to reduce costs further.

Posin, M. E., Kopylev, B. A., and Petrova, N. A.
AMMONIA ABSORPTION BY COPPER-AMMONIA SOLUTION IN A FOAM APPARATUS. [1959] 10p. 11 refs.
Order from LC or SLA mi$1.80, ph$1.80 59-10267

Trans. of Zhurn[al] Prikl[adnoy] Khim[ii] (USSR) 1958, v. 31 [no. 7] p. 1007-1012.

The efficiency of utilization of a foam apparatus for ammonia absorption by a copper ammonia solution in its regenerating in the process of carbon oxide removal from gages, is shown. A 4-plate apparatus is sufficient for the realization of a very high degree of ammonia absorption.

Presting, Willi and Keil, Gerhard.
A CONTRIBUTION TO THE RESEARCH INTO THE STRUCTURE OF MINERAL GREASES. III. THE QUALITY OF PETROLATUMS (Ein Beitrag zur Strukturunterschung von Mineralfetten. III. Zum Gebrauchswert von Vaselinen). [1958] [22]p. (1 photo omitted) 18 refs. Tr57-81.
Order from SLA mi$2.70, ph$4.80 59-10571

Trans. of Chemische Technik (Germany) 1956, v. 8 [no. 1] p. 36-42.

Disperse systems of hydrocarbon waxes and oils (petrolatums) were classified experimentally by chemical material groups. Experiments showed that petrolatums have a wide molecular range. A controlling influence on quality was the proportion of higher-melting n-paraffins. Iso/ring hydrocarbons contributed to the stability of shape and oil retention. These factors affect the rheological properties of petrolatums.

Ružička.
THE USE OF POLYSTYRENE AT LOW TEMPERATURES. [1958] 2p.
Order from ATS $3.50 ATS-17L29R

Trans. of Kislorod (USSR) 1958, v. 11, no. 5, p. 62-64 (Abstracted by A. A. Trokhin from The Use of Polystyrene in Low Temperature Technology, Stvojivenstvi 4, 298-301, 1958.

Topchiyev, A. V., Krenzel, B. A., and Perelman, A. I.
POLYMERIZATION OF OLEFINS TO HIGH MOLECULAR WEIGHT PRODUCTS ON OXIDE CATALYSTS. [1957] 24p. 73 refs.
Order from LC or SLA mi$2.70, ph$4.80 59-10565

Trans. of Uspekhi Khimii (USSR) [1957] v. 26, no. 12, p. 1355-1373.

Discussions are presented on: (1) general data on the polymerization of olefins over oxide catalysts, (2) polymerization on nickel- and cobalt-oxide catalysts, (3) polymerization on chromium oxide catalyst, (4) polymerization of olefins on molybdenum and mixed catalysts, (5) metal hydrides (promoters of the reaction of olefins polymerization), and (6) the mechanism of the reaction.

Ueberreiter, Kurt and Rabel, Wolfgang
SENSITIZED PHOTOPOLYMERIZATION OF STYRENE. PART II: FLUORENONE PEROXIDE-STYRENE SYSTEM; REACTION OCCURRING IN THE DARK. [1959] 17p. 19 refs.
Order from SLA mi$2.40, ph$3.30 59-10942

Trans. of Zeitschrift für Physikalische Chemie (West Germany) 1957, N. F. v. 13 [no. 1/2] p. 95-106.

Thermal polymerization of styrene with addition of fluorenone peroxide is described. Gross velocities and average degrees of polymerization are measured at different peroxide concentrations, and kinetic constants are calculated.

Visloguzov, V. M. and Sysolyatin, S. A.
EXTRACTION OF TITANIUM BY REFINING TITANO-MAGNETITE ORES OF THE KACHKANARSKIY DEPOSIT. 29 Apr 59, 4p. (1 table, 2 figs. omitted). JPRS: L-1645-D.
Order from OTS $0.50 59-11539

Trans. of Gornyy Zhurnal (USSR) 1959, no. 2, p. 65-68.

As a consequence of the characteristic structure of the Kachkanarskiy titano-magnetites, the ilmenite recovered in the refining is almost entirely tied up with the magnetite, forming with it a common complex. This characteristic permits the recovery of titanium not from the entire ore but only from the titano-magnetite, which considerably reduces the amount of material involved in the processing and consequently lowers the expenses of refining.

Zhigach, K. F., Finkel'shtein, M. Z. and Tibilova, T. A.
DEVELOPMENT OF SPECIAL GRADES OF CARBOXYMETHYLCELLULOSE (CMC) TO IMPROVE THE QUALITY OF DRILLING (CLAY) MUDS AND IMPROVEMENT IN THE TECHNOLOGY OF THEIR PRODUCTION. [1959] 9p.
Order from ATS $11.35 ATS-48L30R

Trans. of Izvest[iya] Vysshikh Uchebnykh Zavedeniy. Neft' i Gaz (USSR) 1958, no. 6, p. 31-38.

Ziegler, Karl
PROCESS FOR PRODUCTION OF HIGHER OLEFINS. [24 Oct 58] 22p.
Order from RIS $39.75 Rept. 96948

Trans. of German patent application, Z 3915 (12o, 19/01) DAS 1 034 169, filed 7 Jan 54, pub. 17 July 58.

A process for the production of higher olefins from lower olefins by polymerization at elevated temperatures with catalysts principally composed of Al organic compounds, particularly trialkylaluminums is described. These catalysts polymerized ethylene to γ-butane and/or higher olefins such as γ-hexane and γ-octene at temperatures between 70° to 120° C. Variation of the amount, activity, and character of the cocatalyst prevented formation of butane from ethylene. Smooth conversion of ethylene into α-olefinic ethylene polymers of the desired average molecular weight and of pure character was achieved by combination of triethylaluminum with ethylene to higher alkylaluminums as illustrated by $Al(C_2H_5)_3 + 3n\ C_2H_4 = Al[(C_2H_4)_n \cdot C_2H_5]_3$; treatment of resultant adducts with ethylene in the presence of small amounts of nickel and acetylene compounds according to $Al[(C_2H_4)_n \cdot C_2H_5]_3 + 3C_2H_4 = 3CH_2 = CH(C_2H_4)_{n-1}C_2H_5 + Al(C_2H_5)_3$; distillation of the reaction products so obtained at lowest possible temperatures, the nickel remaining in the residue. Reformed triethylaluminum was then used to start a new reaction cycle.

Civil Engineering

GIDROTEKHNICHESKOYE STROITEL'STVO (USSR) 1958 [V. 27] NO. 12, P. 1-63 (Hydraulic Engineering Construction). [1959] 15p. SOV-98-58-12-(1-21)/21.
Order from OTS $0.50, $3/6 issues PB 141 091T-11

Consists of abstracts in English.

GIDROTEKHNICHESKOYE STROITEL'STVO (USSR) 1959 [V. 28] NO. 1, P. 1-64 (Hydraulic Engineering Construction). [1959] 12p. SOV-98-59-1-(1-14)/14.
Order from OTS $0.50, $3/6 issues PB 141 091T-12

Consists of abstracts in English.

Steuermann, E.
THE FUNDAMENTALS OF THE MODERN THEORY OF DOMES (Die Grundgedanken der Neuzeitlichen Theorie der Kuppeln) tr. by R. V. Wasdell. 14 Jan 59 [18]p. 2 refs.
Order from SLA mi$2.40, ph$3.30 59-10283

Trans. of Der Bauingenieur (Germany) 1933, v. 4, no. 3/4. p. 50-53.

The properties of domes and their actions as beams on elastic foundations are discussed. Compression, tensile, and shearing forces in the construction of domes are studied, and a dome is compared with an arch formed toward the line where it was the pressure surface for continuous distribution of load. Bending movements occurred when the freedom of movement of the dome edge was not arrested, which required shift of the movement perpendicular to the median curve. Free shift or movement of the edge decreased the bending. To decrease deformation, the dome had a constant or a uniformly changing wall thickness and stiffness. Deformation of a conical dome inclined 80° to 90° to the axis corresponded to plate deformation, while angles of inclination of 60° behaved like a cylindrical dome. Historical development of the dome theory was discussed with reference to the mathematical experiments of Reissner, Meissner, Blumenthal, Keller, and Frankhauser.

Electrical and Electronic Engineering

*AVTOMATIKA I TELEMEKHANIKA (USSR) 1958, V. 19, NO. 3, P. 197-284 (Automatics and Telemechanics). [1958] 14p. [SOV[-103-19-3-(1-9)/9.
Order from OTS $0.50, $3/6 issues PB 141 096T-9

Consists of abstracts in English.

AVTOMATYKA (USSR) 1958, NO. 1, P. 3-109 (Automatics). [1959] [11]p. SOV-102-58-1-(1-12)/12.
Order from OTS $0.50, $2/4 issues PB 141 095T-3

Consists of abstracts in English.

AVTOMATYKA (USSR) 1958, NO. 3, P. 1-105 (Automatics). [1958] [12]p. SOV-102-58-3-(1-10)/10.
Order from OTS $0.50, $2/4 issues PB 141 095T-2

Consists of abstracts in English.

CELLOPHANE FOR INSULATION OF CONDUCTORS. [1959] 2p. (2 figs. omitted) 1 ref.
Order from SLA mi$1.80, ph$1.80 59-10582

Trans. of ETZ [Elektrotechnische Zeitschrift. Ausgabe A. Zentralblatt für Elektrotechnik] (Germany) 1937, v. 58, p. 767.

PROMYSHLENNAYA ENERGETIKA (USSR) 1958, [V. 13] NO. 8, P. 1-41 (Industrial Power Engineering). [1958] 22p. SOV-94-58-8-(1-22)/22.
Order from OTS $0.60, $3.50/6 issues PB 141 087T-8

Consists of abstracts in English.

RADIO [MOSCOW] (USSR) 1958, NO. 11, P. 1-64. (Radio). [1959] 1v. SOV-107-58-11-(1-40)/40.
Order from OTS $0.50, $6.00/year PB 141 104T-10

Consists of abstracts in English.

*RADIOTEKHNIKA (USSR) 1958, V. 13, NO. 3, P. 3-81 (Radio Engineering). [1958] 16p. SOV-108-13-3-(1-13)/13.
Order from OTS $0.50, $3/6 issues PB 141 105T-8

Consists of abstracts in English.

*RADIOTEKHNIKA (USSR) 1958, V. 13, NO. 10, P. 2-80 (Radio Engineering) [1959] [17]p. SOV-108-13-10-(1-13)/13.
Order from OTS $0.50, $3/6 issues PB 141 105T-10

Consists of abstracts in English.

*RADIOTEKHNIKA I ELEKTRONIKA (USSR) 1958, V. 3, NO. 11, P. 1323-1407 (Radio Engineering and Electronics). [1959] 1v. SOV-109-3-11-(1-13)/13.
Order from OTS $0.70, $4/6 issues PB 141 106T-10

Consists of abstracts in English.

USSR ELECTRONIC AND PRECISION EQUIPMENT, NO. 7, 20 MAR 59. [1959] [50]p. 130 refs.
Order from LC or SLA mi$3.30, ph$7.80 59-14714

Trans. of unevaluated information selected from Russian-language publications.

Contents:
Items of special interest
  New uses of television
  Solar batteries
  Ion-exchange desalination unit
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USSR ELECTRONIC AND PRECISION EQUIPMENT [NO. 8, 15 APR 59]. [1959] [51]p. 88 refs.
Order from LC or SLA mi$3.60, ph$9.30, 59-14961

Trans. of unevaluated information selected from Russian language publications.

Achievement levels and goals are described in narrative form relating to (1) local production and organization in Leningrad, Moskovskaya Oblast, Latvian SSR, and L'vov, (2) tubes and transistors, (3) radio, (4) television, (5) communications equipment, (6) computers, (7) precision equipment such as instruments, motion-picture apparatus, X-ray equipment, and industrial ultrasonic equipment, and (8) electrical products.

VESTNIK ELEKTROPROMYSHLENNOSTI (USSR) 1958, V. 29, NO. 5, P. 1-80 (Herald of the Electrical Industry). [1959] 1v. [SOV]-110-58-5-(1-25)/25.
Order from OTS $0.70, $4/6 issues PB 141 107T-9

Consists of abstracts in English.

VESTNIK SVYAZI (USSR) 1958, NO. 11, P. 1-36 (Herald of Communications). [1959] 24p.

SOV-111-58-11-(1-36)/36.
Order from OTS $0.60, $3.50/6 issues PB 141 108T-10

Consists of abstracts in English.

Abramov, B. V. and Tikhonov, V. T.
RECHERCHES EXPÉRIMENTALES SUR LES BRUITS DE FOND EN BASSES FRÉQUENCES DES TUBES ET DES TRANSISTORS [Experimental Investigations on the Background Noise at Low Frequencies in Tubes and Transistors] tr. by M. Ermakoff. 1 Apr 58, [15]p. 2 refs. Trans. no. R 581 (text in French).
Order from LC or SLA mi$2.40, ph$3.30 CEA-tr-R581

Trans. in French of Radiotekhnika (USSR) 1957, v. 12, no. 6, p. 44-54.

A method of measuring intensities of low frequency background noise by means of a spectrograph is described.

Druzhinin, G. V.
REDUNDANT SYSTEMS WITH CONTACT ELEMENTS. [1959] 13p. 3 refs.
Order from LC or SLA mi$2.40, ph$3.30 59-10667

Trans. of Akademiya Nauk SSSR. Izvestiya. Otdeleniye Tekhnicheskikh Nauk, 1958, no. 6, p. 96-98.

Redundant contact systems are analyzed with attention given to modes of failure of elements.

Dryakhlov, I. M. and Kol'chitskiy, M. L.
BUDGET AND BANK FINANCING IN THE COMMUNICATIONS SYSTEM. 7 Apr 59, 322p. JPRS: L-1595-D.
Order from OTS $5.00 59-11482

Trans. of mono. Financing in the Communications System, 2d ed., Moscow, 1956.

This textbook is authorized by the USSR Ministry of Communications as a student's manual for the communications technikums. The present edition reflects changes in the organization of financial operations introduced since publication of the 1949 edition, and prior to July 1956. Considerable attention is devoted to problems related to the establishment of working capital norms and analysis of financial indexes.

Feitknecht, W. and Gaumann, A.
CONCERNING THE PASSIVATION OF LEAD IN SULFURIC ACID AND THE PROCESSES OCCURRING IN THE POSITIVE PLATE OF THE LEAD STORAGE BATTERY (Sur la Passivation du Plomb dans l'Acide Sulfurique et les Processus Intervenant dans la Plaque Positive de l'Accumulateur au Plomb). [1959] [46]p. 26 refs. (Foreign text included.)
Order from SLA mi$3.30, ph$7.80 59-10171

Trans. of Journal de Chimie Physique (France) 1952, v. 49, p. 135-144.

The anodic passivation of lead in sulfuric acid has been studied by measuring for a constant current density the change in voltage of the cell, the resistance of the cell and the anodic potential. The formation of the layer of sulfate and its transformation into dioxide have been studied with the electron microscope.

Hase, Alfred
METHOD FOR THE PRODUCTION OF SELENIUM RECTIFIERS. [1959] 6p.
Order from LC or SLA mi$1.80, ph$1.80 59-10756

Trans. of German patent 812,806. Patent appl. for 5 July 51; patent granted 6 Sep 51.

A method for the production of selenium rectifiers in which the selenium applied on the base electrode is subjected to a twofold heat treatment at different temperatures, for example, at about 110°C and at a temperature below the melting point of selenium is described. The first heat treatment is composed of two stages, the first of which takes place before application of the cover electrode. The second stage either wholly or partially coincides with the application of the cover electrode.

Henlein, Walter
TIME LAG OF SEMICONDUCTOR DIODES IN PULSE OPERATION AND ITS PHYSICAL EXPLANATION. [1959] 31p. 14 refs.
Order from SLA mi$3.00, ph$6.30 59-10873

Trans. of Archiv der Elektrischen Übertragung (West Germany) 1957, v. 11, no. 10, p. 387-396.

The common cause of the inductive forward time lag and the capacitive backward time lag in semiconductor diodes lies in the accumulation of free charges in the diffusion regions of the diode when current flows through. All experiments were conducted on special germanium junction diodes with very extensive diffusion regions.

Krämer, Werner.
A NEW D-C VOLTAGE MEASURING TRANSFORMER FOR MEASURING HIGH D-C VOLTAGES. [1958] 13p. 2 refs.
Order from SLA mi$2.40, ph$3.30 59-10996

Trans. of [ETZ] Elektrotechn[ische] Zeitschrift. [Ausgabe A. Zentralblatt für Elektrotechnik] (Germany) 1938, v. 59, no. 48, p. 1295-1298.

The dc polarized impedance coil assumes real transformer characteristics even for parallel connected component rings, provided the core consists of a highly permeable material and exhibits a sharp reversal at the saturation point, and provided the rectified ac current is measured by means of moving coil instruments. Since the device is nonreactive, it can be used, with appropriate circuitry as a dc voltage transformer having a high degree of accuracy and a high load capacity.

Sueur, R.
THE MARSEILLES-ALGIERS HOOKUP BY SUBMARINE TELEPHONE CABLE. [1958] 55p. 1 ref.
Order from SLA mi$3.60, ph$9.30 59-10872

Trans. of l'Onde Électrique (France) 1958, v. 38, no. 372, p. 166-183.

Sujak, B.
NEEDLE COUNTER FOR THE STUDY OF EXTERNAL ELECTROSTATIC FIELDS. [1959] 11p. 7 refs.
Order from SLA mi$2.40, ph$3.30 59-15023

Trans. of Zeit[schrift für] Angew[andte] Physik (West Germany) 1957, v. 9 [no. 8] p. 404-407.

The influence of an external electrostatic field upon the background of an open needle Geiger counter was investigated. A series of measurements are given which represent a new method of applying the open needle counter to investigations of surface charges. The needle counter can be closed by means of a Plexiglas cap in order to contain the ions within the chamber of the counter. The needle counter will respond to both positive and negative surface charges. The method of examining surfaces by means of the needle counter (exo-electrons) can be extended to cases involving bound surface charges.

Tendeloo, K.
SOME MAGNETIC PROPERTIES OF PRESENT-DAY PERMANENT-MAGNET MATERIALS AND THEIR COMMERCIAL USES. Apr 59.
Order from HB $6.50 HB-4505

Trans. of Metalen (The Netherlands) 1958, v. 13 no. 15, p. 268-272.

Demagnetization curves for two recently developed permanent-magnet materials, Ticonal-G, and anisotropic metal with a maximum BH value of $5.3\ 10^6$ gauss-oersteds, and Ferroxdure-2, an anisotropic barium-ferrite alloy with a max. BH of 3.25×10^6 gauss-oersteds. Arrangement for loudspeaker system. Static and dynamic demagnetization fields. Specific uses of the two magnet materials. Design of permanent magnets insuring a permanent flux delivery through them; how to control this flux. Procedure for bringing permanent magnets to the desired state of magnetization through multipole magnetization.

Trentini, Giswalt von
PARALLEL WIRE GRATINGS USED AS CIRCUIT ELEMENTS FOR ELECTRIC WAVES IN SPACE. [1959] 37p. 15 refs.
Order from SLA mi$3.00, ph$6.30 59-10969

Trans. of Zeitschrift für Angewandte Physik (West Germany) 1953, v. 5, no. 6, p. 221-231.

The effect of a parallel wire grating on an electric wave can be described as a parallel inductance. By adding circuit elements, periodically threaded on the wires, arbitrary parallel resistances can be obtained. The amount of energy passing through is determined by means of an interferometer in the 3 cm wave range for several wire gratings. Possibilities of application are illustrated by means of a few simple arrangements.

Zyuko, A. G.
INTERFERENCE-IMMUNITY AND EFFECTIVENESS OF RADIO TELEGRAPH COMMUNICATION WITH AUTOMATIC ERROR CORRECTION [Pomekhoystoychivost' i Effektivnost' Radiotelegrafnoy Svyazi s Avtomaticheskoy Korrektsiyey Oshibok]. 20 Aug 58, 9p. 6 refs. T-124.
Order from LC or SLA mi$1.80, ph$1.80 59-10503

Trans. of Elektrosvyaz' (USSR) 1958, v. 12, no. 5, p. 23-27.

The interference-immunity and effectiveness of a radio telegraph communication system with error detection in the shape of the message are determined. Comparisons are made between the interference-immunity and the effectiveness of such a system and a system in which a seven-digit error-detecting code is used.

Mechanical Engineering

ENERGETIK (USSR) 1958, NO. 3, P. 1-40 (Power Engineer). [1959] 19p. SOV-91-58-3-(1-28)/28.
Order from OTS $0.60, $3.50/6 issues PB 141 084T-9

Consists of abstracts in English.

ENERGETIK (USSR) 1958, NO. 12, P. 1-41 (Power Engineer). [1959] 14p. SOV-91-58-12-(1-20)/20.
Order from OTS $0.60, $3.50/6 issues PB 141 084T-10

Consists of abstracts in English.

TEPLOENERGETIKA (USSR) 1958, NO. 12, P. 3-96 (Heat Power Engineering). [1959] 1v.
SOV-96-58-12-(1-18)/18.
Order from OTS $0.70, $4/6 issues PB 141 089T-11

Consists of abstracts in English.

Ordnance, Missiles, and Satellite Vehicles

Petrov, V.
ARTIFICIAL EARTH SATELLITE, tr. by H. H. [1959] 12p. (7 figs. omitted). H-2523.
Order from OTS $0.50 59-11960

Trans. of mono., Iskusstvennyy Sputnik Zemli, Moscow, 1958, p. 157-166, 202-205 and 279-280.

Radio equipment in the first Soviet earth satellite is discussed and the information that will be obtained from the radio signals is noted.

Vavilov, V. S., Malovetskaya, V. M. and others.
SILICON SOLAR BATTERIES AS SOURCES OF ELECTRICAL POWER FOR ARTIFICIAL EARTH SATELLITES. [1959] 15p. 15 refs.
Order from LC or SLA mi$2.40, ph$3.30 59-10869

Trans. of Uspekhi Fizicheskikh Nauk (USSR) 1957, v. 63, no. 1, p. 123-129.

Discussions are presented on (1) the principles of operation of a semiconductor transducer with a p-n-junction, (2) the volt ampere and load characteristics, and (3) the temperature mechanism of the solar battery. A preliminary investigation of the variation of voltage with temperature is reported which gave $dV/dT = -0.00252$ V/°C.

Sanitation and Safety Engineering

Golubev, S. G., ed.
FIRE-FIGHTING TACTICS, tr. by B. W. Kuvshinoff. 30 Jan 59 [11]p. 1 ref. TG 230-T77.
Order from OTS $0.50 59-11931

Trans. of the table of contents and introduction of a mono. pub. by the Ministry of Public Works, Moscow, 1955.

Kanevskaya, M. D., ed.
CIVIL DEFENSE AGAINST ATOMIC, CHEMICAL AND BACTERIOLOGICAL WEAPONS. 28 Apr 59, 20p. (18 figs. omitted). JPRS: 1535-N.
Order from OTS $0.50 59-13480

Trans. of mono. Pamyatka Naseleniyu po Zashchite ot Atomnogo Khimicheskogo i Bakteriologicheskogo Oruzhiya, Moscow, 1957, p. 17-20, 24-32, 41-43, and 49-61.

MACHINERY, FABRICATION, AND ACCESSORY EQUIPMENT

USSR INDUSTRIAL EQUIPMENT (TRANSPORTATION, CONSTRUCTION, PRODUCTION, AND POWER MACHINERY) [NO. 8, 27 MAR 59]. [1959] [45]p. 106 refs.
Order from LC or SLA mi$3.30, ph$7.80 59-14860

Trans. of unevaluated information selected from Russian language publications.

Achievement levels and goals are described in narrative form, relating to (1) the aircraft industry (2) automation industry (3) bearings (4) construction machinery (5) production machinery, including machine tools, boring machines, presses, and (6) power machinery, including turbines, electrical equipment, diesels and mobile generating units.

USSR MATERIALS AND MATERIALS PROCESSING EQUIPMENT [NO. 8, 13 APR 59]. [1959] [69]p. 151 refs.
Order from LC or SLA mi$3.90, ph$10.80 59-14861

Trans. of unevaluated information selected from Russian language publications.

Achievement levels and goals are described in narrative form, relating to (1) the chemical industry (2) coke chemicals and petrochemicals (3) chemical machinery (4) the petroleum and gas industries (5) coal, peat and shale equipment (6) ferrous metallurgy (7) nonferrous metallurgy, and (8) metallurgical machinery.

Kulikov, N. V.
THE USE OF PLASTIC DRILL PIPES IN DRILLING DEEP WELLS. [1959] 4p.
Order from ATS $5.20 ATS-34L30R

Trans. of Neftyanoye Khoz[yaystvo] (USSR) 1958, v. 36, no. 11, p. 28-30.

Meier, W.
DESIGN OF RECENT WOOD WORKING MACHINES FROM THE VIEW POINT OF ACCIDENT PREVENTION (Gestaltung Neuzeitlicher Holzbearbeitungsmaschinen). [1959] [13]p. (14 figs. omitted)
Order from SLA mi$2.40, ph$3.30 59-15209

Trans. of V[erein] D[eutscher] I[ngenieure]. Zeitschrift (Germany) 1941 [v. 85, no. 33] p. 695-701.

Engines and Propulsion Systems

Leist, K. and Graf, K.
SMALL GAS TURBINES, IN PARTICULAR FOR ROAD VEHICLES (Kleingasturbinen Insbesodere zum Fahrzeugantrieb). Oct 58 [86]p. 38 refs. TIL. T.4839.
Order from SLA mi$4.80, ph$13.80 59-10286

Trans. from Deutsche Versuchsanstalt für Luftfahrt. Berichte (West Germany) 1956, no. 7 [104]p.

The suitability of a gas turbine as a small power unit for road vehicles is discussed. Its properties, as e.g. economy, torque, weight and dimensions, noise, wear and tear, etc. are critically investigated. Small gas turbines already in production are discussed with particular reference to their working data and structural characteristics.

Volkova, T. I.
SERVICE TEMPERATURE OF STEEL FOR FLAT SPRINGS IN LABYRINTH SEALS OF STEAM TURBINES INCREASED TO 640°C (1185°F) [Povysheniye do 640° Rabochey Temperatury Materiala Ploskikh Pruzhin Uplotneniy Parovykh Turbin]. Apr 59.
Order from HB $2.80 HB-4249

Trans. of Metallovedeniye i Obrab[otka] Met[allov] (USSR) 1958, no. 6, p. 21-25.

Need for spring materials giving a dependable performance in steam-turbine labyrinth seals at operating temperatures of 585-640°C (1085-1185°F). Data on composition and heat treatment of steels and alloys tested. Mechanical properties at room temperature and at 585°C. Results of relaxation tests. Particulars on steels for flat springs meeting the requirements for service at 640°C over a period of 10,000 hours. (HB abstract)

Vorkauf, Heinrich
FLOW IN STEAM-PRODUCING, PARALLEL-CONNECTED TUBES. [1958] 9p. 1 ref.
Order from SLA mi$1.80, ph$1.80 AEC-tr-3246

Trans. of Archiv f[ür] Wärmewirtschaft u[nd] Dampfkesselwesen (Germany) 1937, v. 18, p. 75-77.

Experiments with forced-circulation boilers showed that nozzles used at the water intake to the tubes were necessary for a constantly even flow in all tubes, even with uniform heat absorption of the tubes. The nozzles were formerly considered essential only for the proper distribution of water to individual, differently heated tubes. The test apparatus comprised a heating surface having five parallel connected tubes. Heat was uniformly applied to all tubes by a gas burner. It was found that without the use of nozzles there was an uneven flow of water in the tubes upon the formation of steam. With the use of nozzles the water distribution was uniform. The power requirements for circulation and the pressure drop in a tube were determined by experimentation.

Machine Parts and Mechanisms

Drescher, H.
AIR-LUBRICATED SLIDING BEARINGS. [1958] 42p. (38 figs. omitted) 6 refs.
Order from SLA mi$3.30, ph$7.80 AEC-tr-3495

Trans. of [Verein Deutscher Ingenieure]. Zeitschrift (Germany) 1953, v. 95 [no. 38] p. 1182-1190.

Generson, I. G.
EFFECT OF FINAL FORGING TEMPERATURE ON MECHANICAL PROPERTIES OF [TURBINE-DISK] FORGINGS. Apr 59.
Order from HB $4.20 HB-4322

Trans. of Metallovedeniye i Obrab[otka] Met[allov] (USSR) 1958, no. 8, p. 46-51.

Development of an improved heat-treating practice for one-ton turbine-disk or compressor-disk blanks of medium carbon Ni; Cr; Cr-Mo; Ni-Cr; and Ni-Cr-W steels. Sampling technique for determination of mechanical properties as function of heat treatment preceding the forging operation, and of the final forging temperature. Microstructure of forgings. Results of industrial-scale trials on disk forgings: dimensions of forgings; final forging temperatures in relation to the mechanical properties. Increased forge-shop yield due to adjusted temperatures of process annealing and final forging; other resulting benefits. (HB abstract)

Givaudan, C. and Vermorel, E.
LIGHT-WEIGHT PISTON FOR HIGH-SPEED MACHINERY. [1959] 4p.
Order from ATS $6.00 ATS-10L31F

Trans. of French patent 455,539, filed 13 Mar 13, granted 27 May 13, pub. 2 Aug 13.

Manufacturing Equipment and Processes

BYULLETEN' IZOBRETENIY (USSR) 1958, NO. 4, P. 5-136 (Bulletin on Inventions). [1958] 1v. SOV-19-58-4-(1-523)/523.
Order from OTS $1.90, $10/6 issues PB 141 014T-2

Consists of abstracts in English.

MASHINOSTROITEL' (USSR) 1958, NO. 12, P. 1-48 (Machine Builder). [1959] [21]p. SOV-117-58-12-(1-36)/36.
Order from OTS $0.50, $3/6 issues PB 141 116T-10

Consists of abstracts in English.

PRIBOROSTROYENIYE (USSR) 1958, NO. 4, P. 1-32 (Instrument Manufacture). [1959] [16]p. SOV-119-58-4-(1-15)/15.
Order from OTS $0.50, $3/6 issues PB 141 119T-9

Consists of abstracts in English.

PRIBOROSTROYENIYE (USSR) 1958, NO. 9, P. 1-32, (Instrument Manufacture). [1959] [21]p. SOV-119-58-9-(1-18)/18.
Order from OTS $0.50, $3/6 issues PB 141 119T-8

Consists of abstracts in English.

PROCESS FOR COLORING POLYOLEFIN MATERIALS. [9 Jan 59] 7p.
Order from RIS $13.00 RIS-96972

Trans. of Belgian patent 562 893, 2 Dec 57, by Farbwerke Hoechst A. G., Frankfurt. Priority: German patent application F 21 811 IVb/39b, filed 1 Dec 56.

Low molecular weight polyolefins, their copolymers, or mixtures of polymers, are colored in deep, solid shades using dispersed dyes in an aqueous bath. Films, sheets, fibers, yarns, fabrics, and knit goods may be dyed. Polyethylene, which melts from the crystalline state at 130°C, and polypropylene, which melts at 160°C, or other materials with high softening and melting points are recommended. Higher temperatures give better exhaustion of the dyebath and deeper shades. The dyeing is effected between 60 and 120°C, so the colorant will form in the bath in the presence of the material being dyed. Emulsifying agents such as nonionic ethylene oxide condensates are used to obtain good dye distribution. Temperatures must be adjusted to the properties of the material being dyed to avoid shrinkage or other fiber damage. The dyeing of a polyethylene film with 1-amino-2-methoxy-4-hydroxy-anthraquinone, or N, N, -dihydroxyethyl-m-toluidine and other dyes is described.

STANKI I INSTRUMENT (USSR) 1958 [V. 29] NO. 10, P. 1-45 (Machine Tools and Tools). [1959] 1v. SOV-121-58-10-(1-25)/25.
Order from OTS $0.60, $3.50/6 issues PB 141 121T-2

Consists of abstracts in English.

VESTNIK MASHINOSTROYENIYA (USSR) 1958, NO. 11, P. 3-95 (Herald of Machine Building). [1959] 1v. SOV-122-58-11-(1-18)/18.
Order from OTS $0.80, $4.50/6 issues PB 141 122T-4

Consists of abstracts in English.

Askinazi, B. M.
ELECTROMECHANICAL BURNISHING OF METALS. Apr 59.
Order from HB $3.75 HB-4359

Trans. of Metallovedeniye i Obrabotka Metallov (USSR) 1958, no. 9, p. 49-53.

Definition of electromechanical smoothing (burnishing) of metals. Steel compositions used. Variation of surface hardness of quenched steel with current. Variation of depth of surface hardness with number of passes. Particulars on microapparatus and results obtained with it on specimens paired with various other materials and/or having various finishes. Beneficial effect of treatment on wear resistance and promising applications. (HB abstract)

Babarykin, N. N. and Yushin, F. A.
CHANGES IN BLAST-FURNACE PROCESS WHEN WORKING ON FLUXED SINTER. Apr 59.
Order from HB $11.40 HB-4500

Trans. of Stal' (USSR) 1958, v. 18, no. 12, p. 1057-1065.

Continuation and elaboration of studies of blast furnaces having working volumes of 41000 to 48000 cu. ft., reported in 1957 (see Brutcher Translation No. 4066), and running on fluxed sinter (82-87%) and second-grade ores (13-18%). New sampling tube for stock materials. Variation of carbon dioxide content and temperature along furnace radii at different furnace levels. Effect of intensified reduction in medium-temperature zone on working of blast furnace. Confirmation of theory about variation of sulfur content at the different furnace levels; behavior of sulfur in oxidizing zone. Relationship between extent of temperature range within which fluxed sinter becomes pasty, and degree of reduction of the oxides. Best level for softening of stock to ensure a smooth-working furnace. Stage preceding the formation of drops of liquid phase. Conditions under which the FeO in the primary slag can be kept low. Explanation of presence of liquid slag in a mass of 'dry' stock materials. Distance of maximum gas temperature in tuyere zone from tuyeres. Location of entry of drops of liquid metal and slag into hearth zone. (HB abstract)

Berkovich, D. M. and Zvorykin, A. A.
SOME TRENDS IN THE DEVELOPMENT OF THE TECHNOLOGY OF CONTEMPORARY MACHINE BUILDING (TECHNOLOGICAL TRENDS REGARDING MACHINING WITH CUTTING TOOLS) (Nektotoroye Tendentaii v Razvitii Technologii Sovremennogo Mashinostroyeniya). [1959] 19p. 37 refs.
C. T. S. no. 310.
Order from LC or SLA mi$2.40, ph$3.30 59-10303

Trans. of Voprosy Istorii Yestestvoznaniya i Tekhniki (USSR) 1956, v. 1, p. 168-178.

Assembly line use of cutting tools is described in general terms.

Blanter, M. Ye., Kulakov, N. A. and others.
QUENCHING WITH WATER/AIR MIXTURES [Zakalka v Vodovozdushnykh Smesyakh]. Apr 59.
Order from HB $4.65 HB-4446

Trans. of Metallovedeniye i Obrab[otka] Metallov (USSR) 1958, no. 12, p. 29-35.

Investigation of principal factors governing the quenching power of various water/air mixtures to obtain quantitative indices for controlling the water/air quenching of heavier-section steel. Set-up for determining the optimum distance between water atomizer nozzle and surface being quenched; best air pressure for it. Quenching and hardenability studied with models; wide applicability of results in view of the near-constancy of the thermal properties of austenite with varying composition. Quenching rates in water/air mixes. Hardenability: Possibility of predicting the results of heat treating under known conditions of quenching from TTT curves or the end-

quench test. Practical example. Conclusions: The correlations obtained can be applied to steel 15-27 in (400-700 mm) thick; water/air quenching can be adequately controlled by suitable metering apparatus, and full automation is possible; finally, water/air quenching can advantageously take the place of oil and other special media. (HB abstract)

Enzensberger, W. and Fibich, S.
METHODS FOR TESTING BASE MATERIALS, HALF FINISHED AND FINISHED PRODUCTS USED FOR THE MANUFACTURE OF SANDWICH BOARDS WITH PLASTIC-LAYER SURFACES. [1958] 9p. (6 figs. omitted) 5 refs.
Order from SLA mi$1.80, ph$1.80 59-10477

Trans. of Hols Als Roh- und Werkstoff (Germany) 1958, v. 16, no. 4, p. 132-137.

The methods used in Germany for testing base materials, semi-finished and finished products for the manufacture of sandwich boards with plastic-layer surfaces are summarized. In areas where no German standard specifications or procedures for testing exist, the tests are carried out under American standard specifications such as those set up by the National Electrical Manufacturers Association. The methods and standards used for the testing of various substances are described. Melamine resin is tested for degree of purity and condensation, concentration, viscosity, pH value, during time, and service life. Papers are tested for basis weight, moisture content, pH value, tensile strength, absorptive height, ash content, smoothness, fastness to light, and heat resistance. Printing inks are tested for fastness to light, heat resistance, viscosity, and color. Crude boards are tested for surface smoothness, density, thickness, and wood moisture content. Tests are also made of synthetic resin films and finished boards. Special mechanical, thermal, chemical, and other tests are detailed.

Gotal'skiy, Yu. N.
EFFECT OF KIND OF CURRENT ON INTERACTION BETWEEN SLAG AND METAL IN ELECTRO-SLAG WELDING. Apr 59.
Order from HB $2.65 HB-4438

Trans. of Avtomaticheskaya Svarka (USSR) 1955, v. 8, no. 5, p. 47-49.

Experimental verification of theory that in electro-slag welding, in addition to the ordinary adsorption of ions at the metal/slag interface and interaction between these ions, there is also electrolysis. Comparative results of studies on transfer of silicon from slag to weld, showing that in a.c. electro-slag welding, there is less interaction between slag and weld puddle than in ordinary arc welding whereas in d.c. electro-slag welding, the reverse is true. Underlying cause. (HB abstract)

Harders, F., Knüppel, H., and Brotzmann, K.
PRACTICAL FUNDAMENTALS OF LARGE-SCALE DEGASSING OF ROLLING AND FORGING STEELS BY THE VACUUM LIFTER PROCESS. Apr 59.
Order from HB $8.20 HB-4552

Trans. of Stahl und Eisen (West Germany) 1959, v. 79, no. 5, p. 267-272.

Laws governing the vacuum-lifter process for degassing industrial steel heats in small portions, based on experience gained in treating 50,000 m. tons of O.H. steel. Removal of oxygen by reaction with carbon; minimum quantity of steel to be passed through lifter per unit time; minimum diameter of suction pipe in relation to weight of heat. Need for thorough mixing of steel during the brief space of time available in the degassing treatment; overcoming difficulties arising with high-silicon steels. Mode of feeding the deoxidizing and nitrogen-removing agents into degassing vessel: best time for adding them to obtain low inclusion content; minimum degassing surface area in lifter and minimum lifter diameter in relation to throughput; removal of hydrogen; evolution of shape of degassing vessel; importance of adequate height. Measuring technique aimed at keeping track of the oxygen content during the entire degassing treatment. Temperature of heat in vacuum-lifter process: heating of vessel during degassing to compensate for heat losses suffered during the twenty minutes of extra time required by vacuum lifter, and possibly for heat lost in ladle; steps taken to avoid skulling in the degassing vessel. Present status of development of vacuum lifter process: heat losses when treating O. H. steel in 70-ton ladle. Two possible plant designs now available for production-scale operations: stationary setup using transfer-ladle cars and non-stationary setup not using such cars.

Insausti, José Sáenz
CHROMIZING OF STEEL. Apr 59.
Order from HB $7.50 HB-4553

Trans. of Inst[ituto del] Hierro [y del] Acero. [Revista] (Spain) 1956, v. 9, no. 44, p. 250-257.

Description of a chromizing process developed at author's Institute and aimed at utmost simplicity and cheapness. Make-up of chromizing mix; chromizing boxes. Data on a cement for dependably sealing the boxes. Chromizing reactions. Parts chromized by process with a minimum of distortion. Diffusion of chromium into steel: structure and uniformity of coatings as revealed by Marble's reagent; surface finish quality; chief prerequisite to good coatings. Factors governing the coating thickness effect of carbon content on coating quality; best chromizing temperatures for various carbon contents. (HB abstract)

Kats, A.
A COMPARISON OF THE USSR INDUSTRIAL LABOR PRODUCTIVITY LEVELS WITH THOSE OF THE [PRINCIPAL] CAPITALIST COUNTRIES. 27 Mar 59, 24p. 23 refs. JPRS: 1419-N.
Order from OTS $0.75 59-13374

Trans. of Sotsialisticheskiy Trud (USSR) 1959, no. 1, p. 42-55.

Krepyshev, N. V.
AIR COOLING OF BOTTOM OF NO. 2 BLAST FURNACE [Vozdushnoye Okhlazhdeniye Leshchadi Domennoy Pechi No. 2]. Apr 59.
Order from HB $5.80 HB-4550

Trans. of Metallurg (USSR) 1958, no. 11, p. 3-8.

Report on successive attempts at improving the blast-furnace bottom design and construction, especially for operation at increased top pressure and with use of humidified blast. Elucidation of causes of break-throughs experienced in 1953 by using radio-isotopes in foundation. Relationship between useful life of hearth and that of foundation. Design features after rebuilding more extensive use of carbon blocks. Operating data after rebuilding in Nov. 1956 and conclusions to be drawn from them as to effectiveness of new bottom-cooling system. (HB abstract)

Lakomskiy, V. I.
ON THE DESULFURIZATION OF LIQUID IRON WITH MAGNESIUM [O Desul'furatsii Zhidkogo Chuguna Magniyem]. Apr 59.
Order from HB $2.50 HB-4519

Trans. of Liteynoye Proizvodstvo (USSR) 1958, v. 10, no. 11, p. 18.

Investigation based on radiosulfur S-35 into kinetics and nature of desulfurization of cupola iron by magnesium. Arrangement. Results of study: mechanism of transfer of sulfur from metal to fumes or slag, resp., during inoculation with Mg. (HB abstract)

Mishchenko, V. P.
COMMENT ON AYUKOV'S PAPER ON A NEW DESIGN OF STOCK DISTRIBUTOR. Apr 59.
Order from HB $2.50 HB-4509

Trans. of Stal' (USSR) 1958, v. 18, no. 1, p. 22-23.

Various methods tried out at author's works to improve the blast-furnace top distribution system. Objections to Ayukov's claim that the gas flow can be controlled by the top distributor alone; role of tuyeres: substitution of elliptical tuyeres for tapered ones and results obtained. Refutation of Ayukov's statements that uniformity of top distribution is inevitably disturbed by one-sided tapping of iron and that the formation of a ridge in the hopper of the small bell is a necessary result of proper furnace working. (HB abstract).

Namitokov, K. K. and Aleksandrovskiy, N. N.
A RATIONAL METHOD OF ELECTRIC SPARK SINKING OF PROFILED HOLES (Ratsional'nyi Sposob Elektroiskrovoi Proshfvki Fasonnykh Otverstii). [1959] 7p. C. T. S. no. 298.
Order from LC or SLA mi$1.80, ph$1.80 59-10304

Trans. of Vestnik Mashinostroyeniya (USSR) 1956, v. 36, no. 6, p. 51-53.

Nenayezdnikov, I. A.
BONDING OF BRASS TO STEEL WITH A GAS GLAME [Naplavka Latuni na Stal'nyye Izdeliya Gazovym Plamenem]. Apr 59.
Order from HB $4.90 HB-4517

Trans. of Svarochnoye Proizvodstvo (USSR) 1958, no. 7, p. 35-38.

Study of causes of cracks developing in steel being faced with brass. Shape and size of specimens used for experiments. Effect of section shape (round, tee, channel, angle), bonding temperature, structure of steel (cast, rolled), composition of steel (plain carbon, or Cr-Ni-Mo steel ship plate). Recommended heating temperatures for different section shapes of (a) carbon and (b) Cr-Ni-Mo steel; best distance of gas flame from steel base and from brass; preliminary heat treatment recommended for cast steel to be faced with brass. (HB abstract)

Novikov, V. N. and others.
LOCALIZED [INDUCTION] HEAT TREATING OF ELECTRO-SLAG WELDS. Apr 59.
Order from HB $3.85 HB-4320

Trans. of Metallovedeniye i Obrab[otka] Met[allov] (USSR) 1958, no. 8, p. 38-43.

Study of use of industrical-frequency current (55 cps) for localized heat treating of single-pass electro-slag butt welded heavy sections (9-14 ins) to eliminate overheated coarse grain and improve ductility and toughness. Induction-heating setup; coil design to ensure fairly constant temperatures over the entire section thickness. Macro and microstructures of weld metal, as-welded and after induction heating. Mechanical properties of weld metal heat treated in various ways, including induction-normalized. Merits of induction normalizing in cases where high tempering is indicated for a more complete stress relief. Applications in which the recommended localized heat treatment has given good results: welds in tubing and steam pipes, high-pressure drums, columns for forging equipment, assembly welding, etc.

Petko, V. V.
LABORATORY METHODS OF ASSESSING THE TENDENCY OF STEEL BOLTS TO DELAYED BRITTLE FAILURE (Laboratornye Metody Otsenki Sklonnosti Stal'nykh Boltov k Khrupkomu Razrusheniyu so Vremenem). [1959] 8p (7 figs omitted) 5 refs. C. T. S. no. 312.
Order from LC or SLA mi$1.80, ph$1.80 59-10179

Trans. of Zavodskaya Laboratoriya (USSR) 1956, v. 22, no. 2, p. 218-225.

The basic factors contributing to the delayed brittle failure of bolts are discussed. A method is recommended for examining and testing bolts which have failed, with a view to elucidating the cause of their failure. A method has been developed for subjecting bolts to long-continued tension in tightening, and which approaches the conditions in assembling and service.

Rasheev, D.
TTT DIAGRAM FOR SPHEROIDAL-GRAPHITE CAST IRON [Diagramma Izotermicheskogo Prevrashcheniya pri Nagreve Chuguna s Globulyarnym Grafitom]. Apr 59.
Order from HB $5.25 HB-4388

Trans. of Metallovedeniye i Obrab[otka] Met[allov] (USSR) 1958, no. 10, p. 5-10.

Three generalized TTT diagrams for nodular cast iron with primary pearlite, primary ferrite, and primary pearlite + ferrite. Characteristics of transformations shown on diagrams: (1) graphitization of pearlite; (2) transformations in eutectoid range; (3) austenite formation. Examples of practical use of these diagrams for selecting the best temperatures or holding times for various forms of heat treating: annealing to produce ferrite, or a specified ratio of ferrite to pearlite; quenching and normalizing; annealing to decompose the primary cementite.

Rutes, V. S. and Leytes, V. A.
SHRINKAGE PHENOMENA IN CONTINUOUS-CAST STEEL [Usadochnyye Yavleniya v Stal'nykh Zagotovkakh pri Nepreryvnom Lit'ye]. Apr 59.
Order from HB $8.60 HB-4554

Trans. of Liteynoye Proizvodstvo (USSR) 1958, v. 9, no. 12, p. 10-12.

Differences in contraction of steel between conventionally cast ingots and continuously cast billets, particularly after the latter have issued from the mold. Increase in shell thickness as function of cooling rate. Characteristics of solidification of continuous-cast rectangular, square, and round sections. Data on dependence of contraction on rate of secondary cooling for slab and round sections of 0.03% carbon steel and 18-8 Ti steel. Limitations to action of cooling rate (specific water consumption) on rate of solidification. Conditions under which pipe, axial porosity, internal and external tears appear in various c. c. sections and extent to which they are harmful in the final product. Longitudinal and transverse tears: mechanism of their formation; how to adjust secondary cooling so as to minimize tears as well as distortion. Segregation banding, with and without microcracks. (HB abstract)

Shteininger, Z.
ELECTRIC SPARK MACHINING OF WIRE DRAWING DIES (Elektroyskrovaya Obrabotka Fil'erov). [1958] 6p. (4 figs. omitted) C. T. S. no. 299.
Order from LC or SLA mi$1.80, ph$1.80 59-10351

Trans. of Vestnik Mashinostroyeniya (USSR) 1956, v. 36, no. 6, p. 48-51.

Two types of machines are described for piercing holes and machining cones in drawing dies. The first consists of a vertical rotating tool holder spindle, a straight line motion of the tool electrode, and a fixed die holding collet. The apparatus permits machining of holes having a small diameter with good accuracy, but manual feeding is required. The second machine consists of a horizontal rotating work spindle holding the die and a straight line motion non-rotating tool electrode. The electrical system comprises a battery of condensers and a variable rheostat that permits a current variation between 0.2 and 4 amps. This type also has an automatic feed supplied by a solenoid which exerts a constant pulling force. Distilled water is used as the working liquid in both machines. The machines reduced the total time required for the completion of the hole to 1 to 2 hours, and they permitted the manufacture of drawing dies of various profiles from carbide material instead of alloy steel.

Teplyakov, I. N.
THE QUESTION OF EVALUATING DAMAGES CAUSED BY LIMITATIONS IN THE SUPPLY OF WATER TO INDUSTRIAL ENTERPRISES. 26 Nov 58, 3p. JPRS/DC-L 1162.
Order from OTS $0.50 59-11340

Trans. of A[kademiya] N[auk] Kazakhskoy SSR, Alma Ata. Vestnik, 1958 [v. 147] no. 6, p. 73-75.

Vainboim, D. I.
IMPROVEMENTS IN ARC WELDING OF STUDS. [1959] 11p.
Order from ATS $14.15 ATS-33L30R

Trans. of Svarochnoye Proizvodstvo (USSR) 1958, no. 6, p. 36-41.

Veiler, S. Ya., Likhtman, V. I., and Rebinder, P. A.
PLASTICIZATION OF SURFACE LAYER OF METALS BEING WORKED, BY ADSORPTION FROM SURFACE-ACTIVE LUBRICANTS. Apr 59.
Order from HB $3.90 HB-4557

Trans. of Akad[emiya] Nauk SSSR. Doklady, 1957, v. 116, no. 3, p. 415-418.

Effects of various types of surface coatings and lubricants on coefficient of friction, resistance to shear, and drawing force, in the drawing of steel (uncoated and coppered), aluminum, and copper in the form of strip and wire. Increase in shear resistance of plasticized thin surface layer (in which the plastic flow is concentrated) with increase in amount of reduction, for non-active lubricants, and decrease in shear resistance for surface-active lubricants. Effect of coating thickness. Role of oxide films in adsorptional plasticization. Factors determining the effectiveness of liquid lubricants in metal working, especially at high pressures.

Wedl, Hermann
ROLLING AND ROLL STRAIGHTENING MACHINES FOR ROUND BARS, TUBES, AND SHAPES. [1959] 8p.
Order from SLA mi$1.80, ph$1.80 59-10270

Trans. of review in Stahl und Eisen (West Germany) 1957 [v. 77, no. 26] p 1895-1896 (original article by H. Mäkelt in Werkstattstechn[ik u[nd] Masch[inen] -Bau, 1956, v. 46, p. 603-611).

This is a brief review article by Herman Wedl of a much longer article by H. Mäkelt. The basic equations for calculating straightening moments, forces and power are given. The designs of the basic systems are discussed. Schematic drawings are shown for two, three and five roll straightening systems.

Transport, Traction and Hoist Facilities

ECONOMIC PROBLEMS OF RAILROAD CAR UTILIZATION. 14 Apr 59, 18p. (2 graphs. and 7 tables omitted) JPRS: L-733-N.
Order from OTS $0.50 59-13416

Trans. of mono. Voprosy Ekonomiki Ispol'zovaniya Vagonov, Moscow, 1957, p. 47-64.

TRANSPORTATION, COMMUNICATIONS, AND ELECTRIC POWER IN THE USSR, NO. 14, 23 MAR 59. [1959] [56]p. 117 refs.
Order from LC or SLA mi$3.60, ph$9.30 59-14713

Trans. of unevaluated information selected from Russian-language publications.

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ZIL-157, TRUCK (Avtomobil' ZIL-157) tr. by S. E. [1958] 3p. H-2312.
Order from OTS $0.50 59-11288

Trans. of Avtomobil'nyy Transport (USSR) 1958 [v. 36] no. 6, p. 21.

The Moscow automobile plant imeni Likhachev is preparing to produce a new truck with improved roadability, the ZIL-157, in place of the ZIL-151. The primary feature is central system for regulating tire pressure while the vehicle is in motion. The driver controls a valve in the cab connected to a compressor that pumps air to the wheel hubs through special lines. Channels convey air into the tires. Valves and packed connections in the air lines make the system practical. When driving onto roadless terrain, the driver decreases tire pressure to 0.5 kg/cm^2 by releasing air into the atmosphere. This triples the tire contact area and improves traction, eliminating the need for dual tires. Tire pressure is increased to normal on paved roads. The ZIL-157 has a new engine rated at 104 HP at 2,600 RPM with a compression ratio of 6.2. A 2-barrel carburetor, new camshaft, and improved cooling system have added to its efficiency. The rear axle has a new bogie-type suspension using sleeve bearings.

Kamm, W.
EFFECTS ON LONGITUDINAL STABILITY OF VEHICLES (Die Fahrzeugbedingten Einflüsse auf die Fahrtrichtungshaltung von Kraftfahrzeugen). [1958] [11]p. (Foreign text included).
Order from SLA mi$2.40, ph$3.30 59-10169

Trans. of ATZ Automobiltechnische Zeitschrift (Germany) 1958, v. 60, no. 6, p. 149-152.

An analysis of vehicle stability revealed a requirement for more effective side guidance of the rear wheels, compared to the front wheels. Experiments were conducted to ascertain the effects of ground and aerodynamic forces on a vehicle in motion. A formula was derived for achieving improved road behavior from the following factors: (1) angle between longitudinal axis of vehicle and road direction, (2) angular acceleration, (3) moment of inertia about vertical axis through center of gravity, (4) tire side forces, (5) distances from center of gravity to axes, and (6) moment of aerodynamic force component about center of gravity. Suggestions are included for familiarizing an automobile operator with the forces acting on his moving car toward improving his driving abilities.

Lipgart, A. A.
TRUCK GAZ-51A; CONSTRUCTION AND MAINTENANCE, 2nd ED. tr. by S. E. [1959] [10]p. H-2725.
Order from OTS $0.50 59-11889

Trans. of mono. Avtomobil' Gaz-51A, Moscow, 1958, p. 3-8 and table of contents.

Strizhak, A.
ANY MOTOR VEHICLE CAN BE A CROSS COUNTRY VEHICLE (Lyubaya Avtomashina-Vezdekhod) tr. by E. H. [1958] 4p. H-1587.
Order from OTS $0.50 59-11215

Trans. from [Sovetskaya Aviatsiya] (USSR) 1958, no. 92(2956).

Motor vehicle wheels which permit vehicles to pass over plowed fields, marshy and forested terrain, and deep snow are described. The wheels are spherical shaped rubber tires, cut on each side, with an opening for a disc in the center of the tire. Grouters are disposed at intervals on the tire. The tires are put on a truck, fuel carrier, cross-country, or self-propelled combine, replacing conventional rear dual wheels. Fuel consumption on wet dirt roads was less than that used by vehicles with standard wheels. On roads with a hard cover, experimental motor vehicles equipped with the new wheels used 15% more fuel than the conventional vehicles. The use of 4 driving axles, an automatic transmission, and a system for changing the pressure of the air in the tires while a vehicle is moving was possible but not economical.

MATERIALS

Kadaner, L. I. and Masik, A. Kh.
INVESTIGATION OF THE ELECTROPLATING OF METAL OF A PASSIVATED SURFACE. [1959] 12p. 19 refs.
Order from CCT $36.75 CCT-233TT

Trans. of Zhurnal Fizicheskoy Khimii (USSR) 1956, v. 30, no. 9, p. 1983-1989.

On the basis of microcrystalloscopic and x-ray investigations, experiments using the radioactive isotope S^{35}, statistical measurements of the potentials and oscillograms of the change of potential with time, concepts have been developed regarding the mechanism of electrolytic deposition of metal on a passivated surface. (CCT abstract)

Ceramics and Refractories

OGNEUPORY (USSR) 1958 V. 23, NO. 4, P. 143-192 (Refractories). [1959] 1v. SOV-131-58-4-(1-17)/17.
Order from OTS $0.50, $3/6 issues PB 141 134T-10

Consists of abstracts in English.

OGNEUPORY (USSR) 1958 V. 23, NO. 10, P. 433-479 (Refractories. [1959] [12]p. SOV-131-58-10-(1-11)/11.
Order from OTS $0.50, $3/6 issues PB 141 134T-7

Consists of abstracts in English.

ZIRCONIUM OXIDE FROM ZIRCONIUM TETRACHLORIDE. [10 Oct 58] 8p.
Order from RIS $15.75 RIS rept. 96918

Trans. of German patent application G 18 381 (12m, 9) DAS 1 028 108, by Th. Goldschmidt A.-G., Essen, filed 14 Nov 55, pub. 17 Apr 58.

A new process is provided for producing Zr O2 from Zr Cl4. Pure Zr Cl4 is cleaved hydrolytically with superheated steam at 220° C. The intermediately formed zirconium hydroxide is then converted by calcination at 1000° C into Zr O2. The product can be used as a refractory material for insulations, for the manufacture of fireproof crucibles, as a carrier for catalysts, for making optical glasses, and in high-frequency engineering.

Gion, L[éon] and Perrin, L[ouis].
A FRENCH TECHNIQUE OF CERAMIC CUTTING TOOLS (Une Technique Française d'Outils de Coupe en Ceramique). [1958] [11]p. (includes foreign text).
Order from SLA mi$2.40, ph$3.30 59-10190

Trans. of Machine Moderne (France) 1957 [v. 51, no. 581] p. 9-11.

A comparison is made between normal ceramic materials and fritted oxides, and the properties of ceramic materials are discussed. Changes occurring in the course of the fritting explain the great strength and resistance to breakage of the fritted materials, and the increase in surface contact of the crystals by agglomerating the material before sintering was described. In fritting, when a temperature of about 1400° C is reached, the volume of the mass decreases, it becomes more crystalline, and the grains move close to each other. Transfer of matter between the crystals closes or blocks all existing capillary channels, and the pores disappear. Crystal size increases to 50M, and microscopic examination of the crystals shows that the crystals are ruptured. The absence of a preferred orientation in the crystals precludes the chance of breakage along the cleavage planes. The resistance to flexing in fritted alumina containing 95-100% of Al_2O_3 ranges between 4000 and 5000 kg/cm^2, and its compression resistance is between 2000 and 25,000 km/cm^2.

Günther, Karl-George.
ON THE MEASUREMENT OF VAPOR PRESSURE AND VELOCITY OF VAPORIZATION OF GLASS FORMING SUBSTANCES (Zur Messung von Dampfdrucken am Glasbildenden Substanzen). [1958] [17]p. 13 refs.
Order from SLA mi$2.40, ph$3.30 59-10931

Trans. of Glastechnische Berichte (West Germany) 1958, v. 31 [no. 1] p. 9-15.

The method described by Herlet and Reich (Z. anger Phys. 9:14-23, 1957) was extended to vapor pressures between 10^{-5} and 10^{-1} Torr at temperatures up to 1400°C. The principle of measurement was based on the effusion method of Knudsen (Ann. Phys. [4] 28: 999-1016, 1909) and makes use of the weight increase of a condensation area that is suspended from a microscale as quantity of measurement. With this arrangement the vapor pressure of B_2O_3 and SiO as well as of MgF_2 and Na_3AlF_6 within the range between 10^{-4} and

10^{-1} Torr could be measured. The comparison with older measurements showed good agreement for B_2O_3 but lower values for SiO. For MgF_2 the extrapolation of the results leads to a good agreement with older measurements within the range of higher pressures.

Hartmann, H. and Kiessling, K. H.
CONTRIBUTION TO THE KNOWLEDGE OF THE MEAN SPECIFIC HEATS OF SOME TECHNICALLY IMPORTANT GLASSES. III. THE SPECIFIC HEAT OF A BARIUM GLASS (Zur Kenntnis der Mittleren Spezifischen Wärmen Einiger Technisch Wichtiger Gläser. III. Die Spezifische Wärme eines Barytglases). [1958] [10]p. 5 refs.
Order from SLA mi$1.80, ph$1.80 59-10607

Trans. of Glastechnische Berichte (West Germany) 1957, v. 30, no. 5, p. 186-188.

The specific heat of barium glass was measured with an electric silver muffle furnace. The construction of the furnace is described. Observed discontinuities in the region of 600° C. were related to the pretreatment of the glasses. An empirical factor was determined and used to calculate the specific heats of the barium glasses according to Sharp's method. Iron constantan thermocouples were used to measure temperatures. No irregularities appeared in the progress of the mean specific heats in the range between 200-600° C. Irregularities appeared between 600-780° C, and the causes of the irregularities are given.

Jebsen-Marwedel, Hans.
ANALYSIS OF THE IMAGE OF A FRACTURE IN FLAT GLASS (Analyse eines Bruchbildes von Flachglas). [1958] [6]p. 7 refs. (includes foreign text).
Order from SLA mi$1.80, ph$1.80 59-10933

Trans. of Glastechnische Berichte (West Germany) 1958, v. 31, no. 3, p. 93-94.

The configuration of fracture lines which occur when flat glass is broken was analyzed to determine the cause of the breakage. The factors of origin of primary breaks, angles of breaks, and crossing of breaks were primary in determining the cause of a fracture. Regularities in the breaking of flat glass were evaluated, and consistent impact or tensional causes were isolated. Localizing the original crack was a means of ascertaining whether a bubble or foreign matter was present at the point, contributing to the final fracture pattern.

Knapp, Oscar.
DETERMINATION OF THE VISCOSITY-TEMPERATURE CURVE WITH THE AID OF TWO FIXED POINTS. [1959] 3p. 6 refs.
Order from SLA mi$1.80, ph$1.80 59-10934

Trans. of Glastechnische Berichte (West Germany) 1958, v. 31 [no. 3] p. 94-95.

The sagging point and one fixed viscosity point were employed to establish the viscosity-temperature curve of glasses for a broad range. Only 2 points were required for the determination, since the viscosity-temperature curve is represented in a linear function. A simple equation was formulated for examining temperature-viscosity curves of glasses where extreme accuracy was not requisite. The equation which showed the variations in viscosity over a wide temperature range was: $\log\eta = A + \frac{B}{T}$ (T=K°)

Löffler, Johannes.
DIFFUSION PATTERNS AROUND A SAND PARTICLE (Diffusionsvorgänge um das Sandkorn). Preliminary rept. [1958] [14]p. 11 refs.
Order from SLA mi$2.40, ph$3.30 59-10609

Trans. of Glastech[nische] Ber[ichte] (West Germany) 1957, v. 30, no. 4, p. 129-133.

Phenomena occurring when sand dissolves in molten glass were investigated. In the samples tested, separate layers were found. In the first boundary layer, between the glass and sand particle, alkali is increased. The next layer is thick and deficient in alkali, probably as a result of migration in the direction of the sand particle. A third zone is slightly enriched in alkali and sharply defined with respect to the melt. The boundary formation explains the Schlieren-optical effect. In the dissolving of sand particles in molten glass, the aureole was studied, and the chemical changes in the boundary layer between the glass and the sand particles were investigated. It was observed that the layer forming around the sand particle has a tendency to spread out.

Löffler, Johannes.
DIFFUSION PATTERNS AROUND THE SAND PARTICLE. II (Diffusionsvorgänge um das Sandkorn. II). [1958] 5p. 2 refs.
Order from SLA mi$1.80, ph$1.80 59-10938

Trans. of Glastech[nische] Ber[ichte] (West Germany) 1958 [v. 31,no. 7] p. 268-269.

Analyses were made of the surface layers developing from undissolved sand in melting soda-lime glass. In 5 test samples, the ratio of Na_2O to CaO was higher than in the glass itself. Factors which cause formation of a surface layer and its characteristic composition are: (1) particle size of the silica, (2) the amount of separated silica, (3) silica content in the surface layer, and (4) the dividing line between surface layer and glass in the sample. The CaO content in the glass is computed from the CaO content in the surface layer, and these values are subtracted from those obtained for the whole mass. Values for the composition of the glass-free surface layer are thereby obtained.

Metzger, Konrad.
CONTRIBUTION TO THE OPTICAL EXAMINATION OF FLAT GLASS IN REFLECTED LIGHT (Beitrag zur Optischen Prüfung von Flachglas im Reflektierten Licht). [1958] [13]p. 3 refs.
Order from SLA mi$2.40, ph$3.30 59-10928

Trans. of Glastechnische Berichte (West Germany) 1957, v. 30, no. 7, p. 296-299.

A method for examining curved windshields in transient light is discussed, and the disadvantages of small bending radii are indicated. It is shown that a more precise examination of plane plates in reflected light is possible. The method used is described, and screen pictures obtained in the process are explained. Testing of bent glass plates, especially automobile windshields, is conducted by measuring the deflection angle of transient light rays and the power of refraction. The method employs a line screen (raster) which is projected on a screen through the glass to be examined. If the direction of incidence is perpendicular to the plate, the angle of deflection is equal to half of the angle of the wedge. The angles can be determined from the distortion and displacement of the lines of the grating projected on the wall.

Novikov, A. N.
IMPREGNATION OF SILICON-CARBIDE ARTICLES WITH METALS. Apr 59.
Order from HB $6.60 HB-4504

Trans. of Ogneupory (USSR) 1957, no. 12, p. 557-562.

Gas-phase impregnation of silicon carbide articles with metals selected on the basis of the difference between their boiling point and the temperature of the active state of silicon carbide. Prerequisites to successful impregnation. Details on electric furnace used for gaseous impregnation of silicon carbide; methods of packing the impregnating materials; best composition of impregnating mix for ease of molding and performance. Experimental procedure and results; properties of silicon-impregnated silicon carbide; properties of various German and American silicon-carbide heating elements compared with those developed by author between 1941 and 1956. Chief advantages of new process: workpieces may be air-dry and need not be recrystallized. (HB abstract)

Schwiecker, Werner.
GLASS DENSITY AND GLASS STRUCTURE (Glasdichte und Glasstruktur). [1958] [22]p. 18 refs.
Order from SLA mi$3.70, ph$4.80 59-10929

Trans. of Glastechn[ische] Ber[ichte] (West Germany) 1957, v. 30 [no. 9] p. 379-386.

Fuels, Lubricants, and Hydraulic Fluids

GRAPHITIZATION. [1958] 3p.
Order from SLA mi$1.80, ph$1.80 59-10010

Trans. of Petroleum Zeitschrift (Austria) 1933, v. 29 [suppl. 5, p. 5].

Courtel, R. and Schilling, A.
USE OF THE "OIL SPOT TEST" METHOD FOR THE MAINTENANCE OF ENGINE LUBRICATION. [1959] [29]p. 8 refs. A. C. S. I. L. Trans. 1003.
Order from SLA mi$2.70, ph$4.80 59-15011

Trans. of Revue de l'Institut Français du Pétrole [et Annales des Combustibles Liquides] (France) 1956, v. 11, no. 10, p. 1269-1277.

The 'oil spot test' method is an economical way of investigating the evolution of crank case oils and it may lead to the detection of anomalies in the engine performance. This subject is treated from the practical side and the assessment is based chiefly on experiments carried out either on the test bench or during actual running.

Fischer, Franz and Kroenig, Walter.
ELECTROMOTIVE UTILIZATION OF THE OXIDATION OF SOLID AND LIQUID FUELS. [1958] 9p. 3 refs.
Order from SLA mi$1.80, ph$1.80 59-10693

Trans. of Gesammelte Abhandlungen zur Kenntnis der Kohl (Germany) 1923, v. 7, p. 213-224.

The observations on the auto-oxidation of humin substances dissolved in alkaline media (Abh. Kohle 6: 31, 1921), suggested investigating whether this process could not also be used to supply current, in that a cell could be constructed which operates so well at room temperature that it could compete with the Leclanche cell. Since for example, pyrogallol, to which the humic acids are doubtleasly related, possesses an extraordinarily high reduction-potential, the possibility of constructing a "humic acid cell" was thoroly feasible. The production of cheap humin solutions could be easily carried out by the suitable treatment of lignite with alkaline media. But, here too, the experiments could not be planned in such a way as to yield a conclusive decision. Nevertheless, an insight was obtained into the difficulties which stand in the way of the realization of the cell in question and indications of how the problem could perhaps be solved.

Kaesche-Krischer, B. and Wagner, H. G.
THE IGNITION OF FUEL-AIR MIXTURES ON HOT SURFACES (Die Zündung von Brennstoff-Luft-Gemischen an heissen Oberflächen). [1959] [59]p. 25 refs. (Foreign text included).
Order from SLA mi$3.60, ph$9.30 59-10173

Trans. of Brennstoff-Chemie (West Germany) 1958, v. 39, no. 3/4, p. 33-43.

Comparative investigations with various methods for the determination of ignition temperatures are described. Especially the "gas ignition points" as per VDE (Association of German Engineers) and the "drop ignition points" as per ASTM are compared and their dependence upon various parameters such as vessel size, composition of mixture, wall material, etc. determined. It is shown that special differences between the two methods occur when the material to be investigated is capable of forming cold flames. These cold flames are investigated with regard to their significance for the ignition, and the conditions are determined under which they can lead to normal ignition.

Kiselev, A. V. and Nikitin, Yu. S.
EFFECT OF THERMAL AND STEAM TREATMENTS ON THE STRUCTURE AND CATALYTIC ACTIVITY OF SPHEROIDAL SILICA-ALUMINA CATALYSTS. [1959] 7p.
Order from ATS $11.25 ATS-45L30R

Trans. of Khim[iya] i Tekhnol[ogiya] Topliv i Masel (USSR) 1958, v. 3, no. 12, p. 27-32.

Kuznetsov, V. D. and others.
EFFECT OF LUBRICANTS ON PROCESS OF FRICTION. Apr 59.
Order from HB $2.90 HB-4549

Trans. of Akad[emiya] Nauk SSSR. Doklady, 1956, v. 109, no. 1, p. 124-126.

Cases in which surface-active lubricants increase (rather than decrease) the wear of parts in contact; and explanation of this behavior by the chemical interaction between lubricant and solid predominating over other variables. Experimental setup materials and procedure. Lubricants used in study: 1- transformer oil containing stearic acid, and 2- water with soap containing 72% sodium oleate. Results of friction tests indexed by time to failure of (wire) specimens, and by weight loss of pulleys in contact with wire specimens. (HB abstract)

Larbre, J.
DETERGENT OILS AND THEIR DISPERSIVE PROPERTIES (Les Huiles Détergentes et Leurs Propriétés Dispersives). [1958] [17]p. (9 figs. omitted) 21 refs. Tr57-73.
Order from SLA mi$2.40, ph$3.30 59-10660

Trans. of Revue de l'Institut Français du Pétrole [et Annales des Combustibles Liquides] (France) 1956, v. 11, Oct, p. 1298-1312.

Pitin, P. N., Miringof, N. S., and Krakhmalyuk, P. F
SOME COLD TEST RESULTS OF THE NO. 1 EXPERIMENTAL GAS GENERATOR OF THE SHATSK STATION "PODZEMGAZ". [1958] 11p. 5 refs.
Order from LC or SLA mi$2.40, ph$3.30 59-10202

Trans. of Podz[emnaya] Gaz[ifikatsiya] Ugley (USSR) 1957, no. 3, p. 38-43.

The tests were designed to yield data on the filtration properties of the deposit and on the nature of air blast movements not complicated by gas formation or heat transfer. Selected test runs performed (by the experimental gas generator) on the principal coal lens of the Shatsk brown coal basin are reviewed.

Rachfal, Stanislav.
PARAFFIN DEPOSITS AND METHODS OF COMBATING PARAFFIN DEPOSITS. [1958] 9p. 4 refs.
Order from SLA mi$1.80, ph$1.80 59-10476

Trans. of unknown monograph.

The significance of pressure and temperature are stressed as factors having a deciding influence on the mechanism of paraffin deposit formation.

Topchiyeva, K. V. and Moskovskaya, I. F.
THE NATURE OF THE ACIDITY OF SILICA-ALUMINA CRACKING CATALYSTS. [1959] 5p.
Order from ATS $9.15 ATS-80L30R

Trans. of Akad[emiya] Nauk SSSR. Doklady, 1958, v. 123, no. 5, p. 891-894.

Leather and Textiles

Gerasimov, A. N.
CINÉTIQUE DU PROCESSUS D'ETIREMENT. II. [Kinetics of the Drawing Processes] tr. by M. Grekow. 6 Jan 59 [16]p. 3 refs. Trans. no. R 583 (text in French).
Order from LC or SLA mi$2.40, ph$3.30 CEA-tr-R583

Trans. in French of Akad[emiya] Nauk SSSR. [Otdeleniye Tekhnicheskikh Nauk] Izv[estiya] 1957, no. 5, p. 56-61.

Treiber, E.
SOME QUESTIONS IN CONNECTION WITH THE EVALUATION OF DISSOLVING PULPS. [1958] [31]p. 34 refs.
Order from SLA mi$2.40, ph$3.30 59-10216

Trans. of [Paperi ja Puu] (Finland) 1956, v. 38 [no. 4a] p. 145-[152].

hotographic Materials

ZHURNAL NAUCHNOY I PRIKLADNOY FOTOGRAFII I KINEMATOGRAFII (USSR) 1959, V. 4, NO. 1, P. 3-80 (Journal of Scientific and Applied Photography and Cinematography). [1959] [19]p. SOV-77-4-1-(1-22)/22.
Order from OTS $0.50, $3/6 issues PB 141 073T-5

Consists of abstracts in English.

Bogomolov, K. S., Ruditskaya, I. A., and Sirotinskaya, A. A.
HYPERSENSITIZATION OF NUCLEAR PHOTOGRAPHIC EMULSIONS WITH TRIETHANOLAMINE, tr. by Carlo A. Bauman. [1958] [3]p. 2 refs. T-2844.
Order from LC or SLA mi$1.80, ph$1.80 59-10237

Trans. of Zhurnal Nauchnoy i Prikladnoy Fotografii i Kinematografii (USSR) 1958, v. 3, no. 1, p. 52-53.

Matejec, R.
POTENTIOMETRY ON SILVER HALIDE SINGLE CRYSTALS; CONTRIBUTION TO THE MECHANISM OF PHOTOGRAPHIC DEVELOPMENT. [1959] 11p. 13 refs.
Order from SLA mi$2.40, ph$3.30 59-15031

Trans. of Z[eitschrift für] Elektrochemie (West Germany) 1958, v. 62, no. 4, p. 400-404.

The electrochemical equilibrium potentials of silver in contact with aqueous silver halide solution (E_L) and of silver in contact with a silver halide crystal immersed in solution (E_K) are measured, and their dependence on the silver ion concentration of the solution as well as their change by addition of halogen and by exposure are studied. It was found that the E_K potential is 210 ± 40 mv more negative than the E_L potential for AgCl, and 140 ± 40 mv more negative for AgBr. The requirement that the photographic developer must have a 100-150 mv more negative potential for the development of AgBr emulsions than that corresponding to the E_L potential presumably is mostly due to the difference between E_L and E_K and not so much to the dependence of the E_L potential (silver/silver halide solution) on the size of the developing grain.

Protas, I. R., Lyu-Dun' and Popova, L. V.
KINETICS OF FINISHING OF PHOTOGRAPHIC EMULSIONS. [1958] 12p. 6 refs. T-2858.
Order from LC or SLA mi$2.40, ph$3.30 59-10915

Trans. of Zhurnal Nauchnoy i Prikladnoy Fotografii i Kinematografii (USSR) 1958, v. 3, no. 2, p. 88-95.

The kinetics of finishing different types of emulsions prepared from gelatins of different photographic activity and in the presence of gold salt in various concentrations were investigated. A sharply expressed maximum on the curves of dependence of the light sensitivity upon the duration of finishing was observed only for low-dispersion emulsions containing large amounts of chemical sensitizers [high-activity (fast) gelatin, large amounts of gold salt]. The results obtained can be explained if the finishing is regarded as a process during which a new phase is formed (silver sulfide, metallic silver, or metallic gold). In the presence of large amounts of chemical sensitizers, new sensitivity centers are formed in principle, while the existing centers grow mainly in the presence of small amounts of sensitizers.

Sheberstov, V. I., Borodkina, M. S., and Donatova, V. P.
INVESTIGATION OF THE THERMAL RELATIONSHIPS OF PHOTOGRAPHIC DEVELOPMENT. III. THE INFLUENCE OF ANTIFOGGANTS ON THE ACTIVATION ENERGY OF DEVELOPMENT. [1958] 8p. 8 refs. T-2860.
Order from LC or SLA mi$1.80, ph$1.80 59-10774

Trans. of Zhurnal Nauchnoy i Prikladnoy Fotografii i Kinematograffi (USSR) 1958, v. 3, no. 2, p. 112-116.

An increase in the concentration of the excess bromide in the photographic emulsion or addition of potassium bromide to the developer leads to an increase in the activation energy of the development of fog and affects considerably less the activation energy of the development of the image, on account of which the difference in the activation energies of the development of fog and image (ΔE) increases. An analogous result is observed when benzotriazole is added either to the emulsion or the developer. In connection with the increase in the ΔE developer as a result of addition of the compounds indicated to the emulsion or developer. The assumption is expressed that in a general case, the antifoggant effect originating from any of these compounds is caused by an increase in the difference ΔE.

Vendrovskiy, K. V. and Sheberstov, V. I.
EFFECT OF HYPERSENSITIZATION WITH AMINES ON THE FAILURE OF THE RECIPROCITY LAW AT LOW ILLUMINANCES. [1958] 4p. 8 refs. T-2862.
Order from LC or SLA mi$1.80, ph$1.80 59-10771

Trans. of Zhurnal Nauchnoy i Prikladnoy Fotografii i Kinematografii (USSR) 1958, v. 3, no. 2, p. 136-137.

Zhdanov, A. P., Kartuzhanskiy, A. L., and Shur, L. I.
INTERPRETATION OF EXPERIMENTS MADE ON THE INCREASE IN THE SPEED OF NUCLEAR PHOTOGRAPHIC EMULSIONS WITH TRIETHANOLAMINE. [1958] 3p. 11 refs. T-2863.
Order from LC or SLA mi$1.80, ph$1.80 59-10772

Trans. of Zhurnal Nauchnoy i Prikladnoy Fotografii i Kinematografii (USSR) 1958, v. 3, no. 2, p. 139-140.

Zhdanov, A. P., Kartuzhanskiy, A. L. and others.
EFFECT ON TRIETHANOLAMINE ON PHOTOGRAPHIC EMULSIONS SENSITIZED TO PARTICLES OF MINIMUM IONIZING POWER, tr. by Carlo A. Bauman. [1958] 2p. 3 refs. T-2846.
Order from LC or SLA mi$1.80, ph$1.80 59-10245

Trans. of Zhurnal Nauchnoy i Prikladnoy Fotografii i Kinematografii (USSR) 1958, v. 3, no. 1, p. 53-54.

Plastics

PROCESS FOR CURING RESINOUS COMPOUNDS CONTAINING EPOXIDE GROUPS. [27 Mar 59] 3p.
Order from RIS $4.75 Rept. 61049

Trans. of German patent application H 11 780 (39b, 22/10) DAS 1 046 875, by Henkel & Cie., G.m.b.H., Dusseldorf-Holthausen, filed 12 Mar 52, pub. 18 Dec 58.

Formamide, which is liquid at room temperature, is used to cure resinous compounds containing epoxy groups. About 5 to 30% of formamide is added to the starting material, depending on the properties desired in the cured resin, and heat is used to shorten the reaction time. The formamide does not attack materials, equipment, or colors. 4 parts by weight of formamide are added to 35 parts of a resin made by

condensing resorcinol with epichlorohydrin in an alkaline medium. Prolonged heating of the mixture to 100°C gives a clear, pale brownish elastic shape which can be used to bond glass fibers. Two hundred parts by wt. of a solid resin made from B,B,-bis-(4-hydroxyphenyl)-propane and epichlorohydrin in an alkaline medium are melted and mixed with 15 parts by wt. of formamide. Prolonged heating at 100°C yields a formed insoluble resin product which is suitable for bonding metal sheets.

PROCESS FOR STABILIZING CHLORINATED HIGH-MOLECULAR WEIGHT COMPOUNDS. [5 Dec 58] 6p.
Order from RIS $10.75 RIS rept. 6499

Trans. of German patent application V 10 579 (39b, 22/06) DAS 1 023 222, by VEB Elektrochemisches Kombinat Bitterfeld, Bitterfeld, filed 2 May 56, pub. 23 Jan 58.

A new process is disclosed for stabilizing polyvinyl chloride resins against the action of light and heat. The reaction products of alkyl or aryltin oxides with oximes or amidoximes are used as stabilizers for the chlorinated high-molecular weight resins. The stabilizers may be obtained by the reaction of dibutyltin oxide or diphenyltin oxide with equimolar amounts of acetaldoxime, alpha-benzaldoxime and benzophenonoxime in an inert solvent under heat. Transparent films and coatings may be made from the resins.

STABILIZATION OF POLY(VINYL ACETALS). [12 Dec 58] 6p.
Order from RIS $9.00 RIS rept. 61001

Trans. of German patent application W 15 627 (39b, 22/06) DAS 1 028 776, by Wacker-Chemie G.m.b.H., Munich, filed 24 Dec 54, pub. 24 Apr 58.

A new process is provided for stabilizing poly(vinyl ketals). The use of organotin-sulfur compounds as stabilizers for these resins makes possible the production of heat-resistant, light-fast films. The preferred stabilizers are compounds of alkyltin or aryltin with sulfur or organopolytin sulfides in which the Sn atoms are interlinked by S and which are, in addition, saturated by alcohol, on the one hand, and/or alkyl and aryl radicals, on the other. The stabilizers are added after preparation of the acetals or during processing in small amounts (0.1-1%).

Vieweg, R. and Gast, Th.
A RECORDING MICRO-BALANCE FOR DIFFUSION MEASUREMENTS OF PLASTIC MEMBRANES, tr. by S. Fitzgerald. [1958] 10p. (9 figs. omitted) 1 ref.
Order from SLA mi$1.80, ph$1.80 NP-tr-163

Trans. of Kunststoffe (West Germany) 1944, v. 34, nr. 6/7, p. 117-119.

The water vapor permeability of plastic membranes can be measured accurately and automatically by gravimetric means if the diffusing vapor can be absorbed at constant pressure and weighed continuously. The article describes a recording micro-balance which meets this requirement.

Rubber and Elastomers

KAUCHUK I REZINA (USSR) 1958, NO. 9, P. 1-38 (Raw and Vulcanized Rubber). [1959] [18] p.
SOV-138-58-9-(1-11)/11.
Order from OTS $0.60, $3.50/6 issues PB 141 057T-8

Consists of abstracts in English.

KAUCHUK I REZINA (USSR) 1958, NO. 10, P. 1-39 (Raw and Vulcanized Rubber). [1959] [16]p.
SOV-138-58-10-(1-10)/10.
Order from OTS $0.60, $3.50/6 issues PB 141 057T-7

Consists of abstracts in English.

PROCESS FOR COLD VULCANIZATION OF SILICONE RUBBER IN LAMINATIONS. [21 Nov 58] 6p.
Order from RIS $10.75 RIS-61023

Trans. of German patent application W 18 266 (39b, 22/10) DAS 1 026 520, by Wacker Chemie G. m. b. H., Munich, filed 20 Jan 56, pub. 20 Mar 58.

A process for low-temperature curing of compounds forming silicone rubber in laminations is described. One curing or cross-linking agent is incorporated into the silicone rubber compound, the other is applied to the substrate or to a half-finished substrate consisting of several webs, and the two are then contacted with one another.

Franke, W.
POLYISOPRENE AND POLYBUTADIENE. [1959] 11p.
Order from ATS $9.75 ATS-69L30G

Trans. of Kautschuk u[nd] Gummi (Germany) 1958, v. 11, no. 9, WT254, WT256, WT258, WT260.

Wood and Paper

PROCEDURE FOR MASKING BAD ODOURS IN SULPHATE COOKING. [1959] 3p. 2 refs.
Order from LC or SLA mi$1.80, ph$1.80 59-10221

Trans. of German patent 1,018,299; presented 2 Mar 55; publ. 24 Oct 57.

A procedure is described for masking bad odors during cellulose pulping using organic products. A mixture of equal parts n-butyraldehyde, pyridine, geraniol, isoborneol, ionone and bezophenone is added to the digester charge.

Ale[ks]andru, L. and Rogovin, Z.
THE DISTRIBUTION OF THIOCARBONATE GROUPS BETWEEN THE PRIMARY AND SECONDARY ALCOHOL GROUPS OF CELLULOSE XANTHATE. [1958] 5p. 7 refs.
Order from LC or SLA mi$1.80, ph$1.80 59-10231

Trans. of Zhur[nal] Obshchey Khimii (USSR) 1953, v. 23 [no. 7] p. 1203-1205.

Cellulose xanthate with $\gamma = 50$ was prepared by xanthating under the usual conditions, and a cellulose xanthate with $\gamma = 100$ was prepared by additional esterification of the cellulose xanthate in solution. The position of the thiocarbonate groups in the cellulose xanthate was fixed by methylating them (Zhur. Obshchey Khimii (USSR) 23: 1199, 1953). This treatment greatly increases the stability of these esters. The distribution of the methylthiocarbonate groups of the cellulose methyl xanthate between the primary and secondary alcohol groups of the cellulose molecule was determined by tritylating the cellulose methyl xanthate. The tritylation reaction (when carried out in the absence of air) does not change the chemical composition of cellulose methyl xanthate. An attempt to solve the problem by treating the preparations under study with periodic acid (which selectively and completely oxidizes the secondary alcohol groups in cellulose at positions 2 and 3 to aldehyde groups) was not successful. Partial hydrolysis of the methylthiocarbonate groups took place under the action of the periodic acid.

Ale[ks]andru, L. and Rogovin, Z.
THE PREPARATION AND PROPERTIES OF STABLE DERIVATIVES OF CELLULOSE XANTHIC ACID. [1958] 7p. 4 refs.
Order from LC or SLA mi$1.80, ph$1.80 59-10232

Trans. of Zhur[nal] Obshchey Khimii (USSR) 1953, v. 23 [no. 7] p. 1199-1203.

In order to ascertain whether stable derivatives of cellulose xanthic acid could be obtained, the following compounds were prepared and their properties were investigated: (a) cellulose xanthacetic acid, (b) cellulose xanthamide, and (c) cellulose methyl xanthate. It appears that alkyl esters of cellulose xanthic acid (i.e. neutral esters of dithiocarbonic acid), as well as other derivatives of cellulose xanthic acid, for example cellulose xanthacetic acid and cellulose xanthamide, are considerably more stable to saponifying agents, to heat and to prolonged storage, than acid salts of dithiocarbonic acid, particularly the sodium salt of cellulose xanthic acid. The stability of esters of cellulose xanthic acid to the treatments described approaches that of other cellulose esters such as cellulose acetate.

Austin, T[oralf].
PRODUCTION POTENTIALITIES IN NORWEGIAN FORESTS WITH FULL UTILISATION OF EXISTING WOODLANDS AND AFFORESTATION OF THINLY WOODLY AREAS, tr. by E. A. M. Thomson. Dec 58, 7p. [7 illus. omitted].
Order from SLA mi$1.80, ph$1.80 59-10260

Trans. of Norsk Skogindustri (Norway) 1958, v. 12, no. 3, p. 81-86.

Avisiers, J. and Hess, K.
THE CHARACTERIZATION OF CELLULOSE FOR THE VISCOSE PROCESS BY STATISTICAL SWELLING DEGREE. [1958] [13]p. 15 refs.
Order from SLA mi$2.40, ph$3.30 59-10132

Trans. of Holzforschung (Germany) 1956, v. 10, [no. 1, p. 12-18].

A method is described which shows the influence of the native structure of the cells on the dissolving process of pulps. The method is based on easily discernible forms of swelling, which precede the dissolution of the cells and depend on the different swelling of the single elements of the cell structure. The method was tested as to its applicability by means of xanthogenate reaction.

Back, Ernst.
HOW TO OVERCOME PITCH TROUBLES IN SULPHITE BLEACHING PLANTS. [1958] 11p. 15 refs.
Order from SLA mi$2.40, ph$3.30 59-10153

Trans. of Svensk Pappers-Tidning (Sweden) 1957, v. 60 [no. 24] p. 905-910.

An elementary discussion is presented of the chemical reactions involved. The stabilization of resin especially by anionic and nonionic surfactants, as to be carried out before coagulation risks occur, is discussed in respect to practical experience from mill runs. Recommendations are given for the distribution of these stabilizing agents on several consecutive bleaching steps. Physical-chemical and mechanical factors involved as temperature, air and carbon dioxide drawn into the system, the surface structure and chemistry of deposition surfaces in the system and stock flow conditions are considered. Wood anatomical factors of interest as the relative amount and composition of canal resin and parenchyma cell resin are pointed out. Finally factors affecting washing efficiency after the alkaline treatment as well as other technical details are discussed.

Chiaverina, J.
THE MICROSCOPICAL ANALYSIS OF PAPER FILLERS, tr. by D. J. B. Miller. Nov 58, 5p. [15 illus. omitted].
Order from SLA mi$1.80, ph$1.80 59-10442

Trans. of A[ssociation] T[echnique de l'] I[ndustrie] P[apetière]. Bulletin (France) 1957, no. 3, p. 90-97.

The fillers which are used in paper are few in number. It is therefore possible to recognise most of them by

microscopic examination in liquids of suitable refractive index. They are further characterised by microchemical methods. The methods described are reliable and fast and require only minimum quantities of paper.

Eftring, K. E.
METHOD FOR THE MANUFACTURE OF SULPHITE CELLULOSE AND SEMICHEMICAL PULP AND THE PRODUCT SO MANUFACTURED. [1959] 14p.
Order from LC or SLA mi$2.40, ph$3.30 59-10248

Trans. of Swedish patent 153,137; granted 2 Nov 55; valid from 14 July 49; pub. 17 Jan 56.

A method is described for the manufacture of sulphite cellulose and semichemical pulp of varying content of hemicellulose and lignin, in which the lignocellulose material in a first step is sulphonated at elevated temperature with a solution containing sulphite and/or bisulphite and possibly SO_2. The obtained product is washed in a second step and hydrolyzed in a third step, characterized by the features that the temperature during the sulphonation step is controlled in relation to the content of free SO_2 in the sulphonation solution in such a way that any appreciable condensation of the lignin is prevented and the sulphonation is allowed to proceed until a sample, after complete washing with water so that all bisulphite has been removed and subsequent heating to a maximum of 135°C. with 1% SO_2 solution for no more than 3/4 hours, gives a white product with completely separated fibres.

Giertz, H[ans] W[illiam].
WOOD CHEMICAL ASPECTS OF SEMICHEMICAL PULP. [1958] [9]p. 7 refs. (2 figs. omitted).
Order from SLA mi$1.80, ph$1.80 59-10218

Trans. of [Norsk Skogindustri] (Norway) [1956, v. 10, no. 11, p. 389-394].

NSSC-pulps and semichemical sulphate pulps are considered. In semichemical pulping the middle lamella is attacked but not dissolved as in ordinary chemical pulping. The high yield of semichemical pulps therefore partly depends on the existence of middle lamella material on the fibre surface. A comparison is made between neutral sulphite and sulphate semichemical pulping, showing that the former involves both delignification and dissolution of hemicelluloses, whereas the alkali in the latter is consumed mostly by the hemicellulose and only to a less degree by the lignin. The difficulties which arise when cooking softwoods are explained as due to the higher total lignin content compared with hardwoods, and the existence of lignin not only in the middle lamella but also in the fibre wall proper. When bleaching NSSC-spruce pulp an optimum yield of 55 per cent is obtained within a wide range, independent of the yield of the unbleached pulp. The chlorine consumption, however, varies markedly. Based on actual experience it is pointed out that bleached NSSC-pulps are very suitable for typical dense papers, such as greaseproof and glassine; they may be used admixed with other pulps for certain rather dense types of fine papers such as bond and writing paper; for bookpaper, however, in which case softness, bulkiness and opacity are important properties, they seem to be of less interest. Both unbleached and bleached NSSC-pulps cannot be dried without changing their typical papermaking properties drastically. From an export point of view, this is considered to be the greatest disadvantage of semichemical pulp.

Hartler, N[ils].
INFLUENCE OF CHIPPING ON PULP CHARACTERISTICS. Feb 59, 10p. (3 tables, 4 figs. omitted).
Order from SLA mi$1.80, ph$1.80 59-10098

Trans. of Svensk Pappers-Tidning (Sweden) 1958, v. 61, no. 18B, p. 718-725.

Hogenkamp, E.
POWER CONSUMPTION IN THE DRYING OF PAPER, tr. by E. A. M. Thomson. Dec 58, 3p.
Order from SLA mi$1.80, ph$1.80 59-10295

Abridged trans. of Allgem[eine] Papier-Runds[chau] (West Germany) 1958 [v. 6] no. 19, p. 978-979.

Most of the power expended in drying paper could be saved if the web could be made drier before entering the dryer section, without evaporating the water, as theoretically 540 kcal/kg are required to evaporate water at 100°C., i.e. every kg of water previously pressed out saves this amount. If a dry content of 47% could be attained, then only 100 kg of water per 100 kg paper would have to be evaporated.

Jensen, W[aldemar]
BIRCH AS RAW MATERIAL IN THE PRODUCTION OF PULP. [1958] [16]p. [9 illus. omitted] 7 refs.
Order from SLA mi$2.40, ph$3.30 59-10135

Trans. of Svensk Kemisk Tidskrift (Sweden) [1958] v. 70 [no. 4] p. 182-196.

Scandinavian articles published from 1949 through 1957 on pulp and paper developments, primarily in birchwood, are reviewed. Species of birch, its anatomical structure, and its chemical composition are described and compared with spruce. The special problems in processing birch, such as the freeing of sticky acids during bleaching, are described. Tables compare the properties of the different wood compositions and pulps. Methods of cooking sulphate and sulfite pulps, semichemical pulps, groundwood pulps, high yield pulps, and cold soda pulps are detailed, and the uses of the various pulps are listed. A comparison is made between sulphite and sulphate cooks of birch and spruce pulps. Under identical cooking conditions, it is possible to obtain a pulp with the same Roe number at a lower chemical consumption with birch than with spruce; and the birch pulps require less bleach than softwood pulps when they are similarly bleached to a specific whiteness. Birch pulp papers have less tear strength and a lower fold number than softwood pulps, and they are usually employed in mixtures with softwoods. Strength and other properties of various mixtures of birch with softwood pulps are studied.

Kozlov, A. I. and Tret'yakov, P. N.
ACCOMPLISHMENTS AND PLANS FOR THE FUTURE GROWTH OF THE HYDROLYSIS INDUSTRY OF THE USSR. [1959] 11p.
Order from ATS $14.95 ATS-43L30R

Trans. of Gidroliz[naya] i Lesokhim[icheskaya] Prom[yshlennost'] (USSR) 1957, v. 10, no. 7, p. 7-12.

Loras, V.
DETERMINATION OF WHITENESS AND PROBLEMS IN CONNECTION WITH THIS DETERMINATION. [1959] 11p. 7 refs.
Order from SLA mi$2.40, ph$3.30 59-15234

Trans. of Norsk Skogindustri (Norway) 1958, v. 12 [no. 9] p. 318-324.

Rosenberger, N. A.
THE INFLUENCE O[F] VARIOUS BASES ON THE SULPHITE COOKING OF WOOD. [1958] [7]p.
Order from LC or SLA mi$1.80, ph$1.80 59-10227

Trans. of Bumazhnaya Promyshlennost' (USSR) 1956, no. 3, p. 6-10.

Lignosulphonates of the various bases do not have the same solubility. Na and NH_4 sulphonates are more soluble than the corresponding Ca and Ba salts. This difference results in different rates of dissolution of the sulphonated lignin and correspondingly shorter cooking times for acids on Na and NH_4 bases. Experiment showed that Ca and Ba lignosulphonates dissolve considerably more slowly than Na and NH_4 sulphonates, although the pH in both cooking liquors was almost identical. The greater solubility of the Na and NH_4 lignosulphonates not only accelerates the dissolution of the sulphonated lignin, but also facilitates the diffusion of the cooking liquor. Cooking liquor from univalent cations is particularly advantageous for pine since it has increased solubility of the lignosulphonates as well as improved diffusion of the cooking liquor into the heart wood. In using univalent cations it is also possible to reduce the impregnation temperature without extending the time. This reduces lignin condensation and has a favourable effect on the process.

Sachsse, Hans.
RESEARCH AT ZELLSTOFFFABRIK WALDHOF. [1958] [21]p. (7 figs omitted) 1 ref.
Order from SLA mi$2.70, ph$4.80 59-10156

Partial trans. of Das Papier (West Germany) 1956, v. 10 [no. 78] p. 123-134.

Samuelson, H. O.
METHOD OF REFINING WOOD CELLULOSE. [1959] 5p.
Order from LC or SLA mi$1.80, ph$1.80 59-10249

Trans. of Swedish patent 154,158; granted 2 Feb 56; valid from 26 Mar 54; publ. 17 Apr 57.

A method of refining high viscosity wood cellulose is described. The cellulose, in a swelling stage at a temperature lower than+ 100° C., e.g. -20° to +60° C., preferably 0° - 45° C. is subjected to a treatment with a solution of an alkali hydroxide which should have a concentration of at least 6%. In a subsequent stage the cellulose is subjected to a treatment, in acid medium, with a solution containing chlorine dioxide, under such conditions that the molecular weight of the cellulose is decreased, and in a subsequent stage to an alkali heat treatment, i.e. a treatment with an alkaline solution of a temperature higher than 100°C., preferably 110-150°C., resulting in a further decrease in the molecular weight of the cellulose.

Schurz, J.
ON THE ULTRAVIOLET ABSORPTION OF CELLULOSES. [1958] [12]p. 7 refs.
Order from SLA mi$2.40, ph$3.30 59-10154

Trans. of Svensk Pappers-Tidning (Sweden) 1956, v. 59 [no. 3] p. 98-[103].

A number of model experiments regarding the absorption of cellulose are presented which still leave this problem undecided. On the other hand, it is possible to join a group of oxidized celluloses which exhibit a UV absorption band between 3770-3840 mm^{-1} to an independent complex. The name oxycellulose I is proposed for this complex. Furthermore, oxycellulose I is formed during H_2O_2 oxidation as well as due to UV exposure of native, regenerated cellulose. Depending on chain length it is insoluble, soluble in alkali or in water. Oxycellulose I is an essential component of so-called resthemi (L_{10}-L_{18}) and, therefore, the principal carrier of the fibre damaging effect of hemicelluloses. Oxycellulose I is a by-product during colour reversion of cellulose. Oxycellulose is formed owing to the effect of light and oxygen. This degradation proceeds further to strongly-coloured lower molecular compounds.

Schurz, J[osef]
THE U. V. ABSORPTION OF THE STABILIZED XANTHATE GROUP (A NEW METHOD FOR THE DETERMINATION OF THE GAMMA NUMBER). [1959] 6p. 12 refs.
Order from SLA mi$1.80, ph$1.80 59-10128

Trans. of Mikrochimica Acta (Austria) 1955, v. 2/3, p. 589-595.

Various organoxanthates were spectrographically studied in UV and their UV absorption was assigned to the undissociated xanthate groups. Likewise, the UV absorption of organotrithiocarbonic acid was recognized as that of undissociated trithiocarbonic acid. It was also demonstrated that the γ number (degree of substitution) of organoxanthates can be determined from their UV absorptions.

Slavik, Ivan.
CHARACTERIZATION OF CELLULOSE BY VISCOSIMETRIC METHODS. [1959] 9p. 13 refs.
Order from CCT $42.00 CCT-126TT

Trans. of Chemické Zvesti (Czechoslovakia) 1956, v. 10, no. 7, p. 460-467.

Measurements of the viscosity of cellulose at two concentrations, i.e. at 10 g/l in the Höppler viscosimeter and at 0.5-1.0 g/l in the Ubbelohde viscometer, show that the ratio of these two values, expressed according to Philipoff's formula, gives a definite picture of the degree of polydispersity of examined cellulose. Original cellulose can be dissolved in cuprammonium solution as well as alkali cellulose, either after isolation of the cellulose from it or after direct xanthogenation and dissolution in base, and even industrial viscose after appropriate dilution with base. The use of this method for preliminary evaluation of cellulose with respect to its ripening process is recommended.

Söderquist, Ragnar.
SULPHITE PULP FROM PINE. [1958] [15]p. [4 illus. omitted]. 9 refs.
Order from SLA mi$2.40, ph$3.30 59-10861

Trans. of Svensk Pappers-tidning (Sweden) 1955, v. 58, no. 19, p. 706-712.

The cooking of pine should be carried out in a two-stage process, first, sulphonation with sodium bisulphite at a not too low pH, followed by an acid hydrolysis with sulphur dioxide solution. In this way all kinds of pine can be pulped. After cooking, resin removal is necessary, preferably carried out by chemical means. Methods for recovering the chemicals, used in cooking, are described in detail. The unbleached pine sulphite is of good colour and strength, has low resin content and is very easily beaten. It bleaches readily and gives a bleached pulp of high brightness and good strength. The production costs are lower than those for conventional sulphite pulp.

Stenius, A. S.
BRIGHTNESS AND WHITENESS, TWO TERMS THAT ARE OFTEN CONFUSED. [1958] 5p. 11 refs.
Order from SLA mi$1.80, ph$1.80 59-10225

Trans. of Svensk Pappers-tidning (Sweden) [1956] v. 59 [no. 4] p. 172-174.

To emphasize the need of two different terms in Swedish nomenclature for brightness and whiteness, a brief account is given of the physical difference and the correlation existing between brightness of pulp and whiteness of paper.

Treiber, E.
THE FOAM PROBLEM IN VISCOSE DEAERATION. [1958] 13p. 17 refs.
Order from SLA mi$2.40, ph$3.30 59-10164

Trans. of Svensk Pappers-Tidning (Sweden) 1958, [v. 61] no. 5, p. 133-139.

Those factors are discussed which are connected with the rate of deaeration of the viscose, with the foaming and with the stability of the foam. Anti-foaming methods are described and, the results are appended of experiments on the collapsing of foam by the use of a silicone anti-foam agent. This reagent, in emulsified suspersion in octanol, on pouring over the surface of the viscose led to a markedly more rapid collapse of the foam. No disturbance of the spinning process was observed.

Treiber, E. and Stockman, L.
THE EVALUATION AND CHARACTERIZATION OF VISCOSE PULPS. PART I. [1958] [41]p. 155 refs.
Order from SLA mi$3.30, ph$7.80 59-10155

Trans. of Svensk Pappers-Tidning (Sweden) 1956, [v. 59, no. 5] p. 157-171.

The characterization and evaluation of viscose pulps is discussed especially in regard to the relation between the pulp properties and the quality and yield of rayon. On the basis of a comprehensive literature survey a critical review is made of different methods to characterize viscose pulps by different kinds of alkali solubility, alkali insolubility, pentosan content, viscosity and polymolecularity. The significance of the chemical and structural cleanliness of the pulp is discussed as well as the variables in pulp manufacture.

Villiere, A.
MEASUREMENT OF WOOD IN PAPER MILLS, tr. by E. A. M. Thomson. Sep 58, 10p. [3 illus. 1 graph omitted].
Order from SLA mi$1.80, ph$1.80 59-10093

Trans. of Papier, Carton et Cellulose (France) 1958, v. 7, no. 1, p. 100-104, pts. 1-2.

Difficulties in exact volume measurement of wood in a stere are discussed. Theoretically, the standard stere is 0.750 sq m: actually, a stere can vary from 0.4 to 0.8 sq m, depending upon such factors as straightness of logs, or the presence or absence of bark. A stere of thicket wood such as hornbeam can vary 0.550 to 0.650 sq m. Humidity, shrinkage and density are important factors in measurement of the wt of dry ligneous material utilizable for pulping operations. Two methods are given for calculating the wt of dry material, based respectively on average humidity of the wood, and on the density of random samples.

Villiere, A.
THE PHYSICAL PROPERTIES OF WOOD AND THEIR EFFECT ON THE SALE OF PULPWOOD AND CHEMICAL PULP MANUFACTURE, tr. by E. A. M. Thomson. Sept 58, 14p. (5 figs. 4 tables omitted).
Order from SLA mi$2.40, ph$3.30 59-10006

Trans. of A[ssociation] T[echnique de l'I][ndustrie] P[apetière.] Bull[etin] (France) 1956, no. 3, p. 67-77.

Consideration is given to (1) the stere with its variations in amount of raw material actually available for the paper industry; (2) the methods capable of being envisaged for the purchase of pulpwood; and (3) the effects of the stere in papermaking practice.

Virkola, N. E. and Sihtola, H.
THE DEPENDENCE OF COLOUR REVERSION ON pH DURING THE HYPOCHLORITE TREATMENT OF CELLULOSE. [1958] [14]p. 16 refs.
Order from SLA mi$2.40, ph$3.30 59-10222

Trans. of Norsk Skogindustri (Norway) 1958, v. 12 [no. 3] p. 87-94.

The influence of pH in hypochlorite treatment on the properties of cellulose was investigated, and the color reversions of the oxycellulose so obtained and of products obtained in reduction with $NaBH_4$ after the hypochlorite treatment were determined. Cotton linters and periodate oxycellulose prepared from them were studied. The color reversion, copper number and carboxyl content of cotton linters samples treated were the higher, the higher was the consumption of available chlorine in the hypochlorite treatment. This relationship was especially clear when the pH-level of the hypochlorite treatment was between 7 and 9. Reduction with $NaBH_4$ subsequent to the hypochlorite treatment distinctly decreased the copper number and the color reversion of the samples. Comparison between samples oxidized at different pH levels to a given consumption of available chlorine (0.40%) shows that both color reversion and copper number decrease when the pH level rises from 7 to 10 in the hypochlorite treatment. The color reversion of a sample oxidized at pH 11.5 was greater than that of a sample oxidized at a pH level between 9 and 10. Subsequent reduction with $NaBH_4$ decreases the color reversion, so that the resulting values for the color reversion of samples oxidized at pH levels between 7 and 10 are equal, but the value for the color reversion of the sample oxidized at pH 11.5 is greater. Aldehydic and keto carbonyls formed in anhydroglucose units during the oxidation with hypochlorite at pH levels between 7 and 10 play an important role in the color reversion phenomena, while the relatively strong tendency towards color reversion of the sample oxidized at pH 11.5 is not due to carbonyl groups. The color reversion increases with an increasing copper number when the pH level of hypochlorite treatment is between 7 and 9, but when the pH level is raised above 9, the color reversion changes even if the copper number remains constant. The color reversion of the sample oxidized at pH 11.5 was the least noted. Reduction with $NaBH_4$ distinctly decreased the copper number and the color reversion in all the cases investigated. This shows that during hypochlorite oxidations of periodate oxycellulose at different pH levels, carbonyl groups are formed which affect both the color reversion and the copper number. On reduction with $NaBH_4$, the sample oxidized at a pH between 7 and 8 had the least tendency towards color reversion. The ratio of color reversion to copper number, and that of the product of copper number and carboxyl content are not linear. Reduction with $NaBH_4$ after hypochlorite treatment distinctly increases the brightness of the sample, especially when the hypochlorite treatment is carried out at pH levels between 7 and 9.

MATHEMATICS

IZVESTIYA VYSSHIKH UCHEBNYKH ZAVEDENIY. MATEMATIKA (USSR) 1958, NO. 1, P. 3-207 (News of Institutes of Higher Learning, Mathematics). [1959] 1v. SOV-140-58-1-(1-21)/21.
Order from OTS $0.70, $4/6 issues PB 141 032T-2

Consists of abstracts in English.

IZVESTIYA VYSSHIKH UCHEBNYKH ZAVEDENIY. MATEMATIKA (USSR) 1958, NO. 3, P. 3-258 (News of Institutes of Higher Learning, Mathematics). [1959] 1v. SOV-140-58-3-(1-34)/34.
Order from OTS $0.70, $4/6 issues PB 141 032T-1

Consists of abstracts in English.

MATEMATICHESKIY SBORNIK (USSR) 1958, V. 44, NO. 4, P. 409-550 (Mathematics Symposium). [1959] [8]p. [SOV]-39-44-4-(1-5)/5.
Order from OTS $0.50, $3/6 issues PB 141 033T-12

Consists of abstracts in English.

MATEMATICHESKIY SBORNIK (USSR) 1958, V. 45, NO. 1, P. 3-112 (Mathematics Symposium). [1959] [7]p. [SOV]-39-45-1-(1-6)/6.
Order from OTS $0.50, $3/6 issues PB 141 033T-11

Consists of abstracts in English.

MATEMATICHESKIY SBORNIK (USSR) 1958, V. 46, NO. 1, P. 3-132 (Mathematics Symposium). [1958] [10]p. SOV-39-46-1-(1-6)/6.
Order from OTS $0.50, $3/6 issues PB 141 033T-9

Consists of abstracts in English.

MATEMATICHESKIY SBORNIK (USSR) 1958, V. 46, NO. 2, P. 133-259 (Mathematics Symposium). [1958] [6]p. SOV-39-46-2-(1-6)/6.
Order from OTS $0.50, $3/6 issues PB 141 033T-10

Consists of abstracts in English.

*PRIKLADNAYA MATEMATIKA I MEKHANIKA (USSR) 1958, V. 22, NO. 1, P. 3-144 (Applied Mathematics and Mechanics). [1959] 15p.
SOV-40-22-1-(1-15)/15.
Order from OTS $0.60, $3.50/6 issues PB 141 034T-5

Consists of abstracts in English.

USPEKHI MATEMATICHESKIKH NAUK (USSR) 1958, V. 13, NO. 4, P. 3-234 (Progress of Mathematical Sciences). [1959] [12]p. SOV-42-13-4-(1-11)/11.
Order from OTS $0.60, $3.50/6 issues PB 141 036T-4

Consists of abstracts in English.

Gel'fand, I. M.
ON SOME PROBLEMS OF FUNCTIONAL ANALYSIS, tr. by R. P. Illwitzer. 2 Feb 59 [16]p. TG 230-T33.
Order from OTS $0.50 59-11926

Trans. of Uspekhi Matematicheskikh Nauk (USSR) 1956, v. 11, no. 6, p. 3ff.

A discussion is presented of the growth and development of functional analysis which indicates its applications to information theory, numerical analysis, theory of probability, and theory of differential equations. It is predicted that hydrodynamics and theoretical physics will have the strongest influence on the further development of functional analysis and that the field of high-speed computers, information theory, etc., will also have a great influence. Some of the more important problems in the fields of linear topological spaces, linear partial differential equations, quasilinear equations, measure theory, P_1 type rings, and hypergeometric functions are pointed out.

Grandmontagne, Raymond.
TABLE OF HERMITE POLYNOMIALS FOR CALCULATING HARMONIC WAVE FUNCTIONS. [1958], [7]p. 5 refs.
Order from SLA mi$1.80, ph$1.80 59-10966

Trans. of Journal de Physique et le Radium (France) 1958, v. 19 [no. 2] p. 153-158.

A logarithmic table is presented with six decimal places of Hermite polynomials from order 2 to 30 with logarithms of the normalization factors and the exponents used in calculating wave functions of the harmonic oscillator. Twelve values are given for each unit of the variable.

Computing Devices

Gutermkher, L. I.
LONG-TERM CAPACITY MEMORY DEVICE [AND] INFORMATION MACHINES WITH A LARGE HIGH-SPEED "MEMORY". [1958] [9]p.
Order from LC or SLA mi$1.80, ph$1.80 59-10920

Trans. of Proceedings of Conference on Scientific Problems of Automatic Production, held by Academy of Sciences, USSR, 15-20 Oct 56, p. 93-99.

Kantorovich, L. V.
ON A CONVENIENT MATHEMATICAL SYMBOLISM FOR COMPUTER OPERATIONS, tr. by R. P. Illwitzer. 15 Jan 59 [9]p. TG 230-T43.
Order from OTS $0.50 59-11934

Trans. of Akademiya Nauk SSSR. Doklady, 1957, v. 113, no. 4, p. 738ff.

An attempt is made to develop a universal, unambiguous, concise symbolism for describing any mathematical operation, a convenient method of data location, and unique methods of processing mathematical operations.

Radzivilov, E.
FIRST IN THE WORLD. COMPUTERS (Pervaya v Mire) tr. by H. H. [1958] 2p. H-1776-B.
Order from OTS $0.50 59-11281

Trans. from Izvestiya (USSR) 1958, 27 Jan, p. 6.

A portable transistorized mathematical computer has been designed which weighs 45 kg, uses 200 watts electric current, and is about half the size of a typing desk. Ordinary non-linear differential equations of the 6th order may be solved by a single machine, and several machines may be connected together to resolve complex problems. Addition, multiplication, integration, and other calculations are performed at high speed. Only 2 or 3 days are needed to calculate the trajectory of motion for an aircraft for 100 sec. in 20 or 30 different ways. The usual manual operations on a computer would require a month of extensive effort to calculate the same problem.

Schecher, Heinz.
MEASURES TOWARDS A SIMPLIFICATION OF COMPUTATION PLANS IN ELECTRONIC COMPUTERS (Massnahmen zur Vereinfachung von Rechenplanen bei Elektronischen Rechenanlagen). [1958] 32p. (6 figs. omitted) 13 refs. Tr57-167.
Order from SLA mi$3.00, ph$6.30 59-10573

Trans. of Z[eitschrift für] Angew[andte] Math[ematik und] Mech[anik] (Germany) 1956, v. 36, no. 9/10, p. 377-395.

The simplification of programming electronic computers by automatization of organizational procedures is discussed. A method of automatic address substitution is described, wherein the order word has a free digit used for identifying the order. Free address digits are employed in the orders which require an address substitution to bring in the address substituted. The engineering aspects of the automatic address substitution are discussed. Some program types discussed include (1) a linear sequence of orders performed one after another, (2) data addresses which are unknown at the time of the input, (3) the connection of a partial plan as a subplan of a higher level plan, (4) connection of a subplan to a superimposed computation plan or

higher level plan, (5) several types of loops, and (6) library computing plans. Problems of restoring number blocks, changing computation states, sliding commas, and special order introduced by the operator are discussed.

MECHANICS

Akhiyezer, A. I., Lyubarskiy, G. Ya. and Polovin, R. V.
SIMPLE WAVES IN MAGNETOHYDRODYNAMICS. [1958] 6p. 4 refs
Order from MDF $6.00 MDF A-139

Trans. of Ukr[ayins'kyy] Fiz[ychnyy] Zh[urnal] (USSR) 1958, v. 3, no. 4, p. 433-438.

The relation between simple and ordinary plane waves is analyzed. All the simple waves in magnetohydrodynamics are found. It is shown that the constant flow region can only border on a simple wave in the absence of shock waves in magnetic, just as in ordinary hydrodynamics.

Coulomb, M.
ESSAY ON AN APPLICATION OF THE RULES OF MAXIMUM AND MINIMUM TO SOME PROBLEMS OF STATICS, RELATIVE TO ARCHITECTURE (Essai sur une Application des Règles de Maximis and Minimis à Quelques Problèmes de Statique, Relatifs à l'Architecture). 16 Dec 58, [46]p.
Order from SLA mi$3.30, ph$7.80 59-10319

Trans. of Mem[oires de] Math[ematique] et de Phys[ique] 1776, v. 7, p. 343-382.

The influence of friction and cohesion in architectural statics is studied by a combination of calculus and physics. The force on a masonry column, the load it can carry, and the angle under which it would rupture are calculated. It is shown that the strength of homogeneous columns is proportional to their horizontal cross-section. To obtain the pressure of the earth's surface against a vertical plane, the surface is determined which, when acted on by gravity and held by its friction and cohesion, requires support by a horizontal force which is a maximum. Means are shown for determining the curved surface whose pressure against a vertical plane is a maximum. Arches are studied with respect to their dimensions, points of rupture, and the limits which circumscribe their state of rest when cohesion and friction contribute to their solidity. The pressure of fluids on structures is also studied. In all kinds of earth it is possible to fix a 1/16 sloped revetment without danger on 1/7 of the height, for the thickness of the cordon.

Lyubarskiy, G. Ya. and Polovin, R. V.
SIMPLE MAGNETOSONIC WAVES. [1958] 4p. 2 refs.
Order from MDF $4.00 MDF L-123

Trans. of Ukr[ayins'kyy] Fiz[ychnyy] Zh[urnal] (USSR) 1958, v. 3, no. 5, p. 567-570.

It is shown that, just as in ordinary hydrodynamics, the phase velocity of simple magnetosonic waves increases as the density increases under compliance with the inequality

$$\left(\frac{\partial^2}{\partial p^2}\,\frac{1}{\rho}\right)_s > 0$$

This fact is used for a qualitative investigation of the time variation of simple waves. Conditions are found for the formation of discontinuities, which agree with a known criterion. It is shown that self-similar waves are always rarefraction waves. The time dependence of the density is given in a Lagrangian representation.

Polovin, R. V. and Lyubarskiy, G. Ya.
ON THE IMPOSSIBILITY OF RAREFACTION SHOCK-WAVES IN MAGNETOHYDRODYNAMICS. [1958] 3p. 5 refs.
Order from MDF $3.00 MDF P-134

Trans. of Ukr[ayins'kyy] Fiz[ychnyy] Zh[urnal] (USSR) 1958, v. 3, no. 5, p. 571-575.

It is proved that rarefaction shockwaves are impossible in magnetohydrodynamics if the adiabatic compression decreases with an increase in pressure and if an increase in temperature causes an increase in pressure at constant volume.

Shmyglevskiy, Yu. D.
CERTAIN VARIATIONAL PROBLEMS IN THE GAS DYNAMICS OF AXISYMMETRIC SUPERSONIC FLOW (Nekotorye Variatsionniye Zadachi Gazovoy Dinamiki Osesimmetrichnykh Sverkhzvukovykh Techenii) tr. by S. Reiss. [1958] 18p. 6 refs. NASA CC-E-122.
Order from LC or SLA mi$2.40, ph$3.30 59-10317

Trans. of Prikladnaya Matematika i Mekhanika (USSR) 1957, v. 21, no. 2, p. 195-206.

By using the gas-dynamic functions on the surface bounding the "region of influence," the problem of finding axisymmetric bodies with minimum wave drag was studied. The method allows the determination of the minimum-drag shape between two prescribed points when the flow properties at the upstream points are known. The method is applied to the determination of minimum-drag body nose and boattail shapes.

Hydrodynamics, Hydraulics, and Hydrostatics

Dumitrescu, D. T.
FLOW PAST AN AIR BUBBLE IN A VERTICAL PIPE, tr. by W. G. Olscher. [1958] [28]p. (9 figs. 7 tables omitted) 10 refs.
Order from SLA mi$2.70, ph$4.80 59-10290

Trans. of Z[eitschrift] f[ür] Angew[andte] Math[ematik] u[nd] Mech[anik] (Germany) 1943, v. 23, no. 3, p. 139-149.

A theoretical and experimental investigation was made of the shape and velocity of an infinitely long air bubble rising in a vertical circular pipe. An eigenvalue problem of the differential equation $\Delta\phi = 0$ is solved to a first approximation with the assumption that the meridian section of the bubble in the region of the tip may be replaced by a circle. Dimensional considerations show that the velocity of the ascent, ω, of the bubble is $\lambda\sqrt{gR}$, where g is the gravitional acceleration, R the radius of the pipe, and λ a nondimensional constant (the eigenvalue). The eigenvalue is determined by the fact that the asymptotic solution should join the circle of curvature with a common tangent. Four glass pipes, 0.99 cm, 2 cm, 3.76 cm, and 7.0 cm in diam and about 120-cm long were used in the experiments. The bottom of the pipe projected about 4 cm, into a tank filled with water. Air to form the bubble was taken from a compressed air line, via a storage tank, into the bottom of the pipe through a U shaped tube. The experimental apparatus made it possible to produce air bubbles of constant length. The velocity of ascent and shape of the bubble were photographically determined by a Leica III A camera which allowed an exposure time up to 1/1000 sec and a rapid sequence of pictures. A synchronous motor and a stop watch were used to record the time. The velocity of ascent is determined from the distance travelled by the bubble and the time taken. Results confirmed that $\omega=\lambda\sqrt{gR}$ The shape of the bubble was almost the same for the 4 pipes. The measured value of λ was in good agreement with the value 0.496 found by theory.

Kozlov, B. K. and Mologin, M. A.
ON THE VELOCITY OF RISE AND HYDRAULIC RESISTANCE OF GAS BUBBLES IN LIQUIDS, tr. by Michael Roman. May 58 [23]p. 9 refs. (includes foreign text).
Order from LC or SLA mi$2.70, ph$4.80 AEC-tr-3274

Trans. of Akademiya Nauk SSSR. Otdeleniye Tekhnicheskikh Nauk. Izvestiya, 1951, no. 8, p. 1188-1197.

The velocity of rise of air bubbles in water was investigated to determine how their resistance coefficients depend upon the dispersion of bubbles and the diameter of the test tubes. Acceleration of the bubble was determined to be dependent upon the height of the ascent. Velocities of rise in water of bubbles of from 0 to 0.4 mm, 0.4 to 0.9 mm, and 0.9 to 1.0 mm in diam. were determined mathematically. A transition zone was found for bubble diameters between 1 and 2 mm whose velocity of rise was constant at 30 cm/sec. Enlargement in equivalent diameter from 0 to 1 mm with relationship in the initial depth of submersion increased velocity of rise from 0 to 30 cm/sec. Enlargement of diameters to 8 mm for 2 to 4 mm bubble diameters decreased the velocity to 21 cm/sec. Dependent upon bubble diameter, the velocity reached a constant value at a height from 0.5 to 1.25 mm. The larger the diameter, the sooner it acquired a constant velocity. Resistance coefficient of bubbles increased with volume increase, since larger bubbles are stretched to form a disc with an axis directed toward the line of motion. High ascent of bubbles demonstrated that the rise was not dependent upon the height, for it became constant and equal to 21 to 28 cm/sec in a tube of 75 mm diameter and 22 cm/sec in 50 to 25 mm diameter tubes.

METALLURGY

KOKS I KHIMIYA (USSR) 1958, NO. 3, P. 3-64 (Coke and Chemistry). [1959] [14]p. SOV-68-58-3-(1-22)/22.
Order from OTS $0.50, $3/6 issues PB 141 063T-9

Consists of abstracts in English.

KOKS I KHIMIYA (USSR) 1958, NO. 10, P. 3-64 (Coke and Chemistry). [1959] 18p. SOV-68-58-10-(1-25)/25.
Order from OTS $0.50, $3/6 issues PB 141 063T-6

Consists of abstracts in English.

METALLOVEDENIYE I OBRABOTKA METALLOV (USSR) 1958, NO. 7, P. 2-64 (Metallography and Metal Working). [1959] 1v. SOV-129-58-7-(1-17)/17.
Order from OTS $0.60, $3.50/6 issues PB 141 131T-8

Consists of abstracts in English.

METALLOVEDENIYE I OBRABOTKA METALLOV (USSR) 1958, NO. 12, P. 1-61 (Metallography and Metal Working). [1959] 1v. SOV-129-58-12-(1-12)/12.
Order from OTS $0.60, $3.50/6 issues PB 141 131T-7

Consists of abstracts in English.

*METALLURG (USSR) 1958, NO. 5, P. 1-40 (Metallurgist). [1959] [15]p. SOV-130-58-5-(1-16)/16.
Order from OTS $0.60, $3.50/6 issues PB 141 132T-10

Consists of abstracts in English.

*METALLURG (USSR) 1958, NO. 12, P. 1-44 (Metallurgist). [1959] 20p. SOV-130-58-12-(1-21)/21.
Order from OTS $0.60, $3.50/6 issues PB 141 132T-9

Consists of abstracts in English.

NAUCHNYYE DOKLADY VYSSHEY SHKOLY. METALLURGIYA (USSR) 1958, NO. 2, P. 5-255 (Scientific Reports of Higher Schools, Metallurgy). [1959] 1v. SOV-163-58-2-(1-46/46.
Order from OTS $0.90, $3.50/4 issues PB 141 133T-1

Consists of abstracts in English.

ZAVODSKAYA LABORATORIYA (USSR) 1958, V. 24, NO. 11, P. 1299-1424 (Plant Laboratory). [1959] 1v. SOV-32-24-11-(1-37)/37.
Order from OTS $0.70, $4/6issues PB 141 027T-11

Consists of abstracts in English.

Al'tman, A. B.
EFFECT OF SINTERING TEMPERATURE ON PROPERTIES OF IRON-NICKEL-ALUMINUM POWDER ALLOYS [Temperaturnyy Rezhim Spekaniya Metallokeramicheskikh Splavovna Osnove Sistemy Fe-Ni-Al]. Apr 59.
Order from HB $3.75 HB-4444

Trans. of Metallovedeniye i Obrab[otka] Met[allov] (USSR) 1958, no. 12, p. 17-20.

Study of merits of high-temperature sintering, that is, sintering to above the melting point of the finished product, in a search for ways and means of accelerating the sintering of powder-metallurgy alloys, especially of the Alnico type. Composition studied: 10% Al, 17 Ni, 12 1/2 Co, 6 Cu, 0.3 Ti, and 54.2 Fe. Experimental procedure. Results of microexamination of specimens after sintering at different temperatures and for different times. Coercivity, resistivity, residual induction, saturation, and density of alloy as function of sintering temperature and time; best sintering temperature for optimum magnetic properties; relationship between sintering temperature and time needed for maximum coercivity. Usefulness of heating above the point of incipient fusion for other powder-metallurgy alloys such as bronze and brass.

Benedicks, Carl.
THE EFFECT OF WETTING. THE INFLUENCE OF NON-CORROSIVE LIQUIDS ON THE STRENGTH OF SOLID BODIES (L'Effet de Mouillage. Influence des Liquides non Agressifs sur la Résistance à la Rupture des Corps Solides) tr. by M. H. S. Brown. July 58, [18]p. 37 refs. Library Trans. no. 758.
Order from SLA mi$2.40, ph$3.30 59-10071

Trans. of Revue de Métallurgie (France) 1948, v. 45, no. 1/2, p. 9-18.

Experiments on the effect of wetting the surfaces of various materials with different liquids on strength are described. Some liquids increase the strength (e.g. petrol and toluene etc., on glass) while others decrease the strength (e.g. water on glass). The effect is not explicable on corrosion grounds. A brief theoretical discussion of the phenomena is given from the atomic and the energy points of view. Finally a number of well known phenomena which may be explained in terms of the "wetting effect" are listed.

Iofa, Z. A. and Pechkovskaya, Z. B.
CINÉTIQUE DE DÉCOMPOSITION DE L'AMALGAME ET SURTENSION DE L'HYDROGÈNE SUR UNE CATHODE DE MERCURE DANS DES SOLUTIONS ALCALINES [Kinetics of the Decomposition of the Amalgam and the Overvoltage of the Hydrogen on a Mercury Cathode in Alkaline Solutions] tr. by Mme. Bourrely. 9 Feb 59 [11]p. 10 refs. Trans. no. R 598 (text in French).
Order from LC or SLA mi$2.40, ph$3.30 CEA-tr-R598

Trans. in French of Akad[emiya] Nauk SSR. Dok[lady] 1948, v. 59, no. 2, p. 265-268.

Kishkin, S. T. [Klypin, A. A., and Sulima, A. M.]
EFFECT OF PLASTIC DEFORMATION ON HIGH-TEMPERATURE STRENGTH OF [NICKEL] ALLOY EI 437 [Vliyaniye Plasticheskoy Deformatsii na Zharoprochnost' Splava EI 437]. Apr 59.
Order from HB $2.90 HB-4248

Trans. of Metalloved[eniye] i Obrab[otka] Metallov (USSR) 1958, no. 6, p. 18-21.
Another translation is available from OTS $0.50 as 59-13154, JPRS(NY)-L-573, 16 Dec 58, 5p.

High-temperature properties of a creep-resisting, precipitation-hardening Ni-20% Cr-2 1/2% Ti alloy after prestraining and/or aging. Rupture strength at 700°C (1290F) as affected by surface prestraining in various ways. Effect of aging temperature and time. Temperature range in which the influence of grain refinement predominates and range in which the cohesive strength is impaired. (HB abstract)

Kishkin, S. T., Klypin, A. A. and Sulima, A. M.
THE EFFECT OF PLASTIC DEFORMATION ON THE HEAT RESISTANCE OF THE EI437 ALLOY [Vliyaniye Plasticheskoy Deformatsii na Zharoprochnost' Splava EI437]. 16 Dec 58, 5p. (7 figs. omitted) 5 refs. JPRS Trans. L-573-N.
Order from OTS $0.50 59-13154

Trans. of Metallovedeniye i Obrabotka Metallov (USSR) 1958, no. 6, p. 18-20.

A study was made of the properties of the alloy EI437 after preliminary plastic deformation and of the mechanism of its failure at 500°, 700° and 800°C. Results indicate that plastic deformation influences the service life of dispersion-hardened high-temperature alloys of the type EI437, reducing the service life considerably at 700° to 800°C. The influence of plastic deformation is concluded to be linked with an acceleration of the diffusion processes which form the basis of dispersion handening and which lead to a decrease in the breaking strength. At low temperatures and no acceleration of the diffusion processes, the factor of breaking up of the grains of the metal into blocks predominates. At more elevated temperatures, an intensive decrease in the breaking strength which is pronounced near the grain boundaries and in twin fractures of long duration, is observed in dispersion hardened alloys.

Lozinskiy, M. G., Guterman, M. B., and Antipova, Ye. I.
NON-UNIFORMITY OF CREEP [Mikroneodnorodnost' Deformatsii Metallov pri Vysokotemperaturnom Nagreve]. Apr 59.
Order from HB $3.40 HB-4245

Trans. of Metallovedeniya i Obrab[otka] Metallov (USSR) 1958, no. 6, p. 6-9.

First direct recording of differences in rate and amount of creep among different zones (10 mm) of specimens of Ni-Mo and Fe-Mo alloys, within a wide temperature range, above and below the equicohesive, as indexed by the distances between, and the shape (distortion) of, microhardness indentations. Usefulness of method for study of deformation of heated metals and alloys, and of effect of their composition, working, etc. on deformation rate. (HB abstract)

Meerson, G. A. and Samsonov, G. V.
A STUDY OF THE FUSION DIAGRAM OF THE BORON-CARBIDE SYSTEM AND THE NATURE OF THE PHASES IN THIS SYSTEM. [1959] 15p. 7 refs.
Order from CCT $57.75 CCT-514TT

Trans. of Akademiya Nauk SSSR. Sektor Fiziko-Khimicheskogo Analiza. Izvestiya, 1953, v. 22, p. 93-103.

A study has been made of the fusion diagram of the boron--carbon system in the range from 10 to 50% by weight of C, and a method worked out for the metallographic study of alloys in this system, which are noted for their extreme hardness and resistance to etching by the usual reagents. It has been shown that in the range studied boron and carbon form a chemical compound B_4C, which melts with decomposition and is formed at 2250° according to the peritectic reaction $B + \text{liquid} \rightleftharpoons B_4C$. The presence of a eutectic of B_4C and carbon with C content 30.2% and melting point 2150° has been established; solidus lines for the system have been tentatively drawn. The microhardness of boron and of boron carbide has been measured and found to be 3440 and up to 5000 kg/mm^2, respectively. (CCT abstract)

Pogodina-Alekseyeva, K. M. and Eskin, G. I.
EFFECT OF ULTRASONIC VIBRATIONS ON THE PRECIPITATION HARDENING AND TEMPERING OF SOME ALLOYS. apr 59.
Order from HB $3.50 HB-4551

Trans. of Metallovedeniye i Obrabotka Metallov (USSR) 1956, no. 1, p. 42-45.

Arrangement for study of action of ultrasonic waves at elevated temperature. Experimental procedure. Results obtained with use of ultrasonic vibrations in regrad to the speeding up of natural and artificial aging of an Al-Mg-Zn-Cu alloy. Effect of ultrasound on the tempering of as-quenched carbon tool steel. Nature of acceleration of age hardening by ultrasound of various intensities and frequencies. (HB abstract)

Tonkonogiy, A. V., Onayev, I. A. and Vdovenko, M. G.
CYCLONE SMELTING OF COPPER + ZINC CONCENTRATES. [1959] 12p. 9 refs.
Order from CCT $52.50 CCT-513TT

Trans. of Akademiya Nauk Kazakhskoy SSR, Alma Ata. Vestnik, 1957, v. 13, no. 1, p. 60-69.

The results of this investigation show that three processes—roasting, distillation, and smelting—can be combined in one unit in the cyclone process. This makes the process suitable for the smelting of Urals copper-zinc and other polymetallic concentrates with separate extraction of the valuable components. The process has the following characteristics: (1) The productivity of unit volume of the cyclone chamber is several times as great as that of reverberatory furnaces or shaft furnaces. (2) The degree of desulfurization can be regulated within wide limits, so that it is possible: (a) to convert concentrated poor in copper into rich and super-rich mattes; (b) to decrease specific fuel consumption, relative to the consumption in reverberatory smelting, by utilization of the heat of combustion of sulfides; if the air is preheated sufficiently, the smelting does not require any carbonaceous fuel; (c) to obtain exit gases with high contents of sulfur dioxide, which may be utilized in sulfuric acid production. (3) In the cyclone smelting of copper-zinc concentrates a considerable proportion of zinc and other volatile metals may be extracted in the distillate. (5) The cyclone process does not require the use of any special methods for grinding or drying of the charge; the auxiliary operations in charge preparation are thereby made considerably simpler and cheaper. In conclusion, it is pointed out that adoption of the cyclone process in existing plants would lower smelting costs and greatly increase the productivity without any increases in floor space. (CCT abstract)

Ferrous Metals

STAL' (USSR) 1958 [V. 18] NO. 5, P. 385-479 (Steel). [1959] 1v. SOV-133-58-5-(1-31)/31.
Order from OTS $0.70, $4/6 issues PB 141 136T-8

Consists of abstracts in English.

STAL' (USSR) 1958 [V. 18] NO. 11, P. 961-1055 (Steel). [1959] 1v. SOV-133-58-11-(1-25)/25.
Order from OTS $0.70, $4/6 issues PB 141 136T-9

Consists of abstracts in English.

Arkharov, V. I., Mar'yevich, V. P. and others.
TEXTURE DE LA COUCHE OXYDÉE DU FER. XI. ÉTUDE DE LA COUCHE OXYDÉE QUI SE FORME AU COURS DE L'OXYDATION DU FER PAR LE GAZ CARBONIQUE [O Teksture v Zheleznoy Okaline. XI. Issledovaniye Okaliny, Obrazuyushcheysya pri Okislenii Zheleza v Uglekislom Gaze] [Texture of the Oxide Layer of Iron. XI. Study of the Oxide Layer Which is Formed During the Oxidation of Iron by Carbon Dioxide] tr. by Mme. Masour. 7 Oct 58 [11]p. 6 refs. Trans. no. R 572 (text in French).
Order from LC or SLA mi$2.40, ph$3.30 CEA-tr-R572

Trans. in French of Fiz[ika] Met[allov] i Metallov[edeniye] (USSR) 1957, v. 5, no. 2, p. 251-254.

The dissociation pressure of CO_2 in the temperature range of about 1000°C brings about equilibrium conditions for the existence of Fe_3O_4 in the same way as for H_2O. If iron is oxided in water vapour, scale is formed, the external layer of which consists of magnetite with certain structural anomalies distinguishing it from the equilibrium Fe_3O_4. For obtaining detailed information on the mechanism of oxidation of iron, it was of interest to investigate the scale forming on iron in a CO_2 atmosphere and to compare the structural picture with that obtained for the case of oxidation in water vapour. Three series of tests were made with a constant gas speed and a temperature of about 1000°C with armco iron specimens in the form of cylinders of 6-mm diam and 30 mm length annealed for durations of 3, 7 and 14 hr. By means of X-ray investigations it was established that during the initial stage (about 7 hr) the oxidation of the iron at 1000°C in a CO_2 atmosphere produces a scale of the phase FeO, and no signs of the presence of Fe_3O_4 on the outside surface of the scale could be detected. This is attributed to the fact that the speed of supply of oxygen to the reaction front is limited. In the subsequent stage the process is limited by the continuously decreasing speed of supply of iron to the reaction front and, as a result of that, conditions occur which are favourable for forming an Fe_3O_4 layer above the FeO layer. Following that, the structural picture of the process of oxidation in a CO_2 atmosphere is similar to that pertaining in H_2O vapours. The difference occurring in the initial stages in these two cases is attributed to differences in the adsorption and desorption of gaseous components.

Becker, Heinz and Hoff, Hubert.
INFLUENCE OF MANGANESE AND LEAD CONTENTS ON THE MACHINABILITY OF RIMMING FREE-MACHINING STEEL. [1958] 16p. 3 refs.
Order from SLA mi$2.40, ph$3.30 59-10241

Trans. of Stahl und Eisen (West Germany) 1957 [v. 77, no. 18] p. 1215-1220.

Materials from eight different melts were investigated with bits of a high speed steel with 18% W and 5% C using a thrust of 0.1 mm/revolution and a 0.5 mm depth of cut with increasing cutting speeds according to Steel-Iron Testing Specification 1166-52, also with cemented carbide bits of a standard type characterized by a relatively low wear resistance and a slight tendency to form sharp projections using a 0.5 mm/revolution thrust and a 2 mm depth of cut in a cutting force test according to Steel & Iron Testing Specification 1168-52 and using a 0.25 mm/revolution thrust and 2 mm depth of cut in a constant time wear test according to Steel-Iron Testing Specification 1162-52. With steel having over 1% manganese the sulfur prints of the cross section of the specimen were the same, although the sulfur in the core was significantly higher than that in the shell of rimmed steels. With materials with less than 1% manganese, important segregated zones as well as shell bubbles were determined. Steels with high manganese were inclined to form banded structures. Equal or slightly higher cutting forces were required for steels with high Mn and no Pb than for a steel with 1.02% Mn and 0.22% Pb; with lower cutting speeds significantly lower cutting forces were required than for the steels with 0.65 and 0.88% Mn. With increasing cutting speed, the core machined better than the cold strengthened shell. For the steels with 1.06 and 1.20% Mn, equally good V_{comp} values were found as for the steel with 1.02% Mn and 0.22% Pb. The characteristic values for flank and crater wear determined using a long time turning test with a cemented carbide bit, a thrust of 0.25 mm/revolution, 2 mm depth of cut, and 25 to 200 m/min cutting speed show that in the range of 0.65 to 1.2% Mn with increasing manganese the constant time behavior of free machining steels is improved. This statement was not valid for the steel which contained the lowest sulfur and unusually high quantities of oxide inclusions. The steel with about 1% Mn and 0.22% Pb showed no better constant time behavior than a steel of similar composition without lead. Steels with low manganese were generally considerably superior in surface quality to steels with high manganese when turned at low speed.

Bungardt, Karl, and Muelders, Otto.
STRENGTH PROPERTIES OF TEMPERED HOT-WORK STEELS AT ELEVATED TEMPERATURES. [1958] [20]p. (23 figs. omitted).
Order from SLA mi$2.40, ph$3.30 59-10161

Trans. of Stahl [und] Eisen (West Germany) 1958, v. 78, no. 16 [p. 1119-1126].

Studies were made of the effect of the tempering temperature and time on the properties of alloy steels (X3OWCrV93, X3OWCrV53, X3OWCrV41, 45CrVMoW58, 45CrMoV67, and X38CrMoV51) at temperatures up to 700°C. Results indicated that the application of load at high temperatures ultimately results in properties which approach those obtained in the as-annealed condition. Tensile strength, yield strength, reduction of area, and elongation vary in accordance with the relation for describing the diffusion-dependent changes of the material properties, developed by J. H. Hollomon and L. D. Jaffe, $P = T_K (19 + \log t)$, where T is tempering temperature in °K and t is tempering time in hours. Tensile and yield strengths decrease steadily with tempering, regardless of the testing temperature, although the effect of the tempering treatment on the elongation and reduction of area varies with the composition. Steels characterized by a high resistance to softening and high elevated-temperature strength exhibit a region of hot embrittlement, whereas steels which have lower resistance to softening and lower elevated-temperature strength show a steady increase in ductility.

Davidenkov, N. N. and Belyayeva, E. I.
STUDY OF IMPACT FATIGUE STRENGTH. Apr 59.
Order from HB $2.80 HB-4349

Trans. of Metalovedeniye i Obrab[otka] Metallov (USSR) 1958, no. 9, p. 12-15.

New experiments on the difference between impact fatigue strength and ordinary fatigue strength values obtained on two low-alloy structural steels, with special consideration given to any effect exerted by differences in size (diameter) of the test bars. Dimensions of bars. Data on effect of scale factor for low vs. high-temperature tempered specimens upon their ordinary vs. impact fatigue strengths. (HB abstract)

Gomelauri, N. G.
PROSPECTS FOR THE DEVELOPMENT OF FERROUS METALLURGY IN THE GEORGIAN SSR. 13 Apr 59, 8p. JPRS: L-1618-D.
Order from OTS $0.50 59-11500

Trans. of Stal' (USSR) 1958 [v. 18] no. 6, p. 486-488.

This survey is based on industrial statistics for 1957.

Harders, Fritz, Knuppel, Helmut, and Brotzmann, Karl.
THE TREATMENT OF LARGE STEEL HEATS UNDER REDUCED PRESSURE. [1958] 17p.
Order from SLA mi$2.40, ph$3.30 59-10265

Edited trans. of Stahl und Eisen (West Germany) 1956, v. 76, no. 26, p. 1721-1728.

Improved steel was produced by vacuum melting and casting. A reduced pressure above a melt altered the equilibrium of chemical reactions, in which one of the products is a gas, and elements whose solubility was influenced by their partial pressure were removed. The vacuum treatment was performed in the ladle into which the metal had been tapped from the melting furnace. A vacuum chamber having a downward protruding tube was positioned over the ladle and lowered into the molten metal. A portion of the metal was drawn into the vacuum chamber and degassed. The chamber was then raised, allowing the metal to flow back into the ladle. The process was continued until substantially all the metal was degassed. An equation was derived to determine the number of times that the metal must enter the vacuum chamber. A pilot study indicated that 1 to 10 mm of vacuum was sufficient. Nitrogen content was reduced to 0.004%, oxygen to between 0.003 and 0.006%, and hydrogen to 1.3 cc/100g of metal. Although the vacuum treatment introduced an additional step in the steel making process, it simplified other stages of the operation.

Koch, W[alter] Schrader, A[ngelica] and others.
CHANGES IN THE MICROSTRUCTURE OF AUSTENITIC STEELS DURING LONG-TIME CREEP TESTS. [1959] [2]p.
Order from SLA mi$1.80, ph$1.80 59-10159

Summary trans. of Stahl [u]nd Eisen (West Germany) 1958, v. 78, no. 16, p. 1251[-1262].

Nesmeyanov, A. N., Perevalova, E. G., and Golovnya, R. V.
REACTIONS OF SUBSTITUTION OF HYDROGENS IN FERROCENE (Reaktsii Zameshcheniya Vodorodov Ferrotsena). [1958] [5]p. 4 refs. Tr57-33.
Order from LC or SLA mi$1.80, ph$1.80 59-10645

Trans. of Akad[emiya] Nauk SSSR. Doklady. 1954, v. 97 [no. 3] p. 459-461.

Oding, I. A. and Tulykov, G. A.
CREEP OF AUSTENETIC STEEL UNDER COMPLEX STRESS. 17 Nov 58, 19p. 12 refs. (includes foreign text).
Order from LC or SLA mi$2.40, ph$3.30 AEC-tr-3465

Trans. of Akademiya Nauk SSSR. Otdeleniye Tekhnicheskikh Nauk. Izvestiya, 1958, no. 1, p. 3-10.

Experiments were conducted on austenetic steel of the type EYAIT 1X18H9T concerning creep in the complex stress state at 600° C. Special apparatus employing thin-walled tubular samples was used. The thermal treatment provided an exposure at 1100° C for 30 min and cooling in air. Each sample was subjected to only one experiment for a duration of from 1500 to 2000 hr with a constant ratio of tensile and twist forces. Creeping curves were plotted and results tabulated. The plastic flow theory was shown to be applicable. A calculation of the details of apparatuses operating under creeping conditions in the complex stress state can be made from results of experiments of expansion and creeping. The most precise dependence for low creeping rates was the exponential dependence between creeping rate and stress. The power dependence between the creeping rate and stress coincided accurately over a wide interval. Hypothesis relating to directions of the main stresses and main axis of the deformation rates over a long period were not confirmed. Creep theories based on isotropic behavior of the real technical alloys require correction.

Rybasenko, L. D.
EFFECT OF CARBON ON THE ENDURANCE LIMIT OF CASE-CARBURIZED STEEL. Apr 59.
Order from HB $2.50 HB-4514

Trans. of Metalloved[eniye] i Obrab[otka] Metallov (USSR) 1957, no. 10, p. 19-21.

Contradictory literature data on effect of case and core carbon contents of carburized steel on endurance limit. Study of two plain C steels (0.22 and 0.44% C). Relation between endurance limit of steels with (a) up to 1.10% C and (b) above 1.10% C in case, and core carbon content. (HB abstract)

Perkas, M. D.
DETERMINATION OF CASE CARBON CONTENT ON CARBURIZED STEEL BY X-RAY METHOD. Apr 59.
Order from HB $2.75 HB-4512

Trans. of Zavodskaya Laboratoriya (USSR) 1956, v. 22, no. 9, p. 1061-1063.

Advantages of use of X-rays for carbon determinations in carburized steel over chemical methods. Degree of tetragonality of martensite lattice as indexed by 200-002 doublet width for carbon contents of over 0.60%. Use of width of 110-011 line as index for carbon contents below 0.60%, according to the Kaminskii-Kurdyumov technique. Results obtained on a carburizing steel containing 0.18% C, 0.50 Cr, 1.8 Ni, 0.25 Mo; depth at which the maximum case carbon content was found. (HB abstract)

Prosvirin, V. I.
PHASES PRESENT IN CHROMIUM-NICKEL AUSTENITIC STEELS CONTAINING TITANIUM [Fazovyy Sostov Khromonikelevykh Austenitnykh Staley s Titanom]. Apr 59.
Order from HB $2.75 HB-4387

Trans. of Metallovedeniye i Obrab[otka] Met[allov] (USSR) 1958, no. 10, p. 2-5.

Correlations regarding the formation of Ti-containing phases in austenitic steels. Composition ranges studied: 0.06-0.10% C, 13.4-16.1 Cr, 15.6-25. 3 Ni, 0.68-2.66 Ti. Composition of secondary phases after quenching effect of quenching temperature on amount of Ti in secondary phases. Variation of amount of electrolytic residue with aging temperature and corresponding variation of percentage of titanium. Changes in content of the various components in the phases, in weight of the electrolytic residue and lattice parameter with aging temperature. (HB abstract)

Sanina, A. P. and Timofeyev, M. M.
STUDY OF DUCTILE-BRITTLE TRANSITION TEMPERATURE OF SOME LOW-ALLOY STEELS. Apr 59.
Order from HB $2.00 HB-4324

Trans. of Metallovedeniye i Obrabotka Metallov (USSR) 1958, no. 8, p. 57-58.

Search for inexpensive structural steels resistant to embrittlement at subzero temperatures. Steel compositions tested and compositions recommended for use. Effect of heat treating subsequent to hot working, and of phosphorus content (0.015 to 0.05% P) upon critical transition temperature. Results of tests for weldability; data on electrodes best suited; particulars on coating composition; impact strengths of welds, after welding and after straining at various subzero temperatures, followed in part by tempering.

Light Metals

Glazunov, S. T., Kornilov, I. I., and Yakimova, A. M.
EFFECT OF HYDROGEN ON STRUCTURE AND PROPERTIES OF THE INDUSTRIAL TITANIUM ALLOYS VT 2, VT 3, AND VT 3-1. Apr 59.
Order from HB $7.25 HB-4506

Trans. of Akad[emiya] Nauk [SSSR]. Otd[eleniye] Tekh[nicheskikh] Nauk. Izvest[iya] 1958, no. 9, p. 17-24.

Study of effects of hydrogen contents ranging from 0.005 to 0.08% upon structure and mechanical properties of titanium alloys in the Ti-Al-Cr (1.7-4.9% Al, 1.90-2.60% Cr) and Ti-Al-Cr-Mo (4.9% Al, 2 Cr, 1.5 Mo) systems, the latter with an alpha + beta structure; and working out the most favorable conditions for vacuum annealing of the Ti-2.5 Cr-1.7 Al alloy VT 2 to eliminate the harmful effects of H, and more specifically, improve the ductility. Specimen preparation and experimental procedure. Evaluation of authors' work done on laboratory as well as production scale. (HB abstract)

Schmitt, H. and Wittner, H.
ORIGIN OF NON-METALLIC IMPURITIES IN ALUMINIUM AND THEIR INFLUENCE ON FURTHER PROCESSING (Herkunft der Nichtmetallischen Verunreinigungen im Aluminium und ihr Einfluss auf Dessen Weiterverarbeitung) tr. by H. E. Nowottny. 30 July 58 [18]p. 9 refs. Rept. no. B-TM-220-58.
Order from SLA mi$2.40, ph$3.30 59-10043

Trans. of Zeitschrift für Erzbergbau und Metallhüttenwesen (West Germany) 1956, v. 9, no. 9, p. 417-421.

The most frequent non-metallic impurities in aluminium are aluminium oxide, elemental carbon, phosphorus, sulphur, nitrogen and hydrogen. The presence of aluminium oxide is attributed to re-oxidation and aluminothermic reactions. Phosphorus and sulphur are introduced with the bauxite, hydrogen originates from the water of crystallisation and from the moisture content of raw materials, contamination by carbon is caused by the electrodes. The effect of these impurities on the metallurgical, mechanical and physical properties of aluminium is discussed.

Shamrai, F. I.
LITHIUM AND ITS ALLOYS. [1958] 230p. 308 refs.
Order from OTS $3.00 AEC-tr-3436

Trans. of mono. Litiy i Ego Splavy, Moscow, 1952.

Contents:
General characteristics of lithium and its minerals
The chemistry of lithium compounds
The metallurgy of lithium
The properties of lithium
The analytical chemistry of lithium
Binary alloys of lithium
Ternary alloys of lithium

Nonferrous (except light) Metals

PROCESS FOR PREPARING EXTREMELY PURE SELENIUM (AT LEAST 99.99% PURITY). [24 Oct 58] 4p.
Order from RIS $6.25 RIS-96945

Trans. of German patent application N 12 844 (12i, 17) DAS 1 035 113, by Norddeutsche Affinerie, Hamburg, filed 16 Oct 56, pub. 31 July 58.

Adding small amounts of magnesium powder to pure selenium before distillation or fractionation results in Se with reduced amounts of contaminating metals, particularly tellurium. Not more than 0.5 g/100 g. total charge is needed. Specific methods using ordinary distillation and vacuum distillation, which yielded even higher separation of the contaminants, are described. In a photometric determination of the line 2385.76 A, the Te content was 0.0045%, and the other qualitatively detectable elements were Si, 0.001; Mg, 0.0001; Cu, 0.0001; and Pb, 0.001%. No foreign lines could be detected in the distillate under Harvey conditions. Crude Se of about 86% purity can be purified by adding 1% of the Mg powder and then distilling. A product of extreme purity can be obtained by using a system with high separatory efficiency.

Savitskiy, E. M.
PHYSICAL-CHEMICAL PROPERTIES AND FIELDS OF APPLICATION OF RARE METALS. Apr 59.
Order from HB $10.60 HB-4313

Trans. of Metallovedeniye i Obrab[otka] Metallov (USSR) 1958, no. 8, p. 2-13.
Another translation is available from OTS $0.50 as 59-13154, 16 Dec 58, 5p.

Classification of the less common metals based on similarity in physico-chemical properties, production processes, and joint occurrence in the earth's crust. Fields of application of light less-common metals: lithium, beryllium, caesium, rubidium, barium, and strontium. Refractory less-common metals: zirconium, hafnium, vanadium, columbium, tantalum, and rhenium. Very rare elements: germanium, gallium, indium, thallium, selenium, and tellurium. Rare-earth metals (lanthanides): cerium subgroup and yttrium subgroup. Radioactive rare metals. - This is a review article with a bibliography, half Russian and half non-Russian. (HB abstract)

Structural Metallurgy and Corrosion

COATING RESINS FROM NAPHTHALENE AND FORMALDEHYDE. [5 Dec 58] 6p.
Order from RIS $10.00 RIS rept. 61021

Trans. of German patent application B 26 205 (39c, 19) DAS 1 024 236, by Badische Anilin- & Soda-Fabrik A. G., Ludwigshafen, filed 26 June 53, pub. 13 Feb 58.

A new resin is produced that is useful in the preparation of corrosion-resistant coatings or lacquers. The resins are made from naphthalene and formaldehyde and are soluble in toluene. The naphthalene and formaldehyde are reacted in a molar ratio of 1:1 to 1.0:1.5 in the presence of 45 to 55% sulfuric acid, under heat, until resins containing at most 3% but preferably less than 1% of oxygen are formed.

Henry, G[uy], Plateau, J[ean] and Philibert, J[ean]. USE OF BROMINE IN ELECTRON METALLOGRAPHY. [1958] [5]p.
Order from SLA mi$1.80, ph$1.80 AEC-tr-3522

Trans. of [Academie des Sciences, Paris]. Comptes Rendus (France) 1958, v. 246, p. 2753-2756.

The use of bromine, together with direct carbon replicas, as an agent to dissolve ferrous alloy matrices for preparing objects in electron metallography is described. Separation of replicas, various methods of extraction, identification and analysis of precipitates and inclusions are discussed. Bromine, in a 10% ethyl alcohol solution, was used to separate the direct carbon replicas and to extract the precipitates and inclusions either in the replica or on a carbon film.

Tseytlin [Kh. L., Kurcheninova, N. K.] and others. CORROSION OF STEELS BY HOT ALKALINE SOLUTIONS UNDER PRESSURE. [1958] 7p.
Order from LC or SLA mi$1.80, ph$1.80 AEC-tr-3302

Trans. of [Khimicheskaya Promyshlennost' (USSR) 1944, no. 7, p. 438-440].

See Chem. Abstr. 49: 4488g, 1955 for abstract of the original paper.

NUCLEAR PHYSICS AND NUCLEAR CHEMISTRY

Braunbek, Werner.
BASIC IDEAS OF NUCLEAR PHYSICS (Grundbegriffe der Kernphysik) tr. by Douglas M. Gluntz. 17 Dec 58 [13]p. (3 figs. omitted).
Order from SLA mi$2.40, ph$3.30 59-10259

Trans. of Atomkernenergie (West Germany) 1958, [v. 3, no. 2] p. 72-74.

Models are analyzed to explain the properties of atomic nuclei. A first group of models with independent basic particle motion has one nucleon moving alone in a potential field. Examples are the potential well, the Fermi gas, and the shell models. A second group of models covers those with strong interaction, such as the droplet, the compound-nucleus, and the alpha-particle models. Between the two groups are the optical and the collective models which have recently gained importance. The compound-nucleus model and the optical model are particularly suited for treating nuclear reactions caused by bombardment of the nucleus with elementary particles. The operation, utility, and limitations of the droplet, shell, collective, alpha-particle, and other models are discussed.

Gutbier, H.
MASS SPECTROMETRIC STUDIES OF THE REACTION $X^+ + H_2 \rightarrow HX^+ + H$ (Massenspektrometrische Untersuchung der Reaktion $X^+ + H_2 \rightarrow HX^+ + H$). [1959] [19]p. 14 refs. Tr57-161.
Order from SLA mi$2.40, ph$3.30 59-10577

Trans. of Zeitschrift für Naturforschung (West Germany) 1957, v. 12a [no. 6] p. 499-507.

When different simple charged ions (X^+ ions) collide with H_2 molecules, a formation of ions of type HX^+ occurs. The mass spectrometric study showed that the formation of HX^+ is proportional to the concentration of X^+ and of H_2. It is inversely proportional to the velocity of the X^+ ions. The effective cross-section area and the specific rate of formation of the HX^+ compound was measured for the following X^+ ions: H_2^+, He^+, Ne^+, A^+, Kr^+, N_2^+, O_2^+, and CO_2^+. The effective cross-section areas are of the order of magnitude of 10^{-15} sq cm for an average kinetic energy of the ions of $E_{kin} = 0.25$ ev. Some HX ions are compared with corresponding molecules which have the same electronic configuration. Thus, for example, the molecules H_2, HF, HCl, and HBr correspond to the ions HHe^+, HNe^+, HA^+, and HKr^+.

Elementary Particles

Broglie, M. Louis de.
FIELDS CREATED BY THE PROTON AND THE NEUTRON (Sur les Champs Créés par le Proton et par le Neutron) tr. by Charles S. Oldfield. 6 Jan 59, [5]p. 1 ref.
Order from SLA mi$1.80, ph$1.80 59-10334

Trans. of [Academie des Sciences, Paris] Comptes Rendus, 1949, v. 229, pt. 2, p. 640-643.

A discussion is presented showing how the previous concept of the interaction between elementary particles and the fields of the photon and meson (Comptes Rendus 229; 157, 269, and 401, 1949) can be used to advance the theory of nuclear fields.

Degtyarev, V. V.
COMPUTATION OF ELECTRON TRAJECTORIES IN CROSSED ELECTRIC AND MAGNETIC FIELDS. [1958] 8p. 3 refs.
Order from LC or SLA mi$1.80, ph$1.80 59-14307

Trans. of Izvestiya V[ysshikh] U[chebnykh] Z[avedeniy]. [Fizika] (USSR) 1958, no. 5, p. 102-107.

An attempt is made to compute the trajectories of electrons moving between plane-parallel electrodes under the effect of direct electric and magnetic fields and the variable electrical field of a progressing wave. This is done by using a pair of differential equations to describe the motion of the electrons, and elliptic functions to express the equation of the electron trajectory.

Ginzburg, V. L. and Fain, V. M.
ON RADIATION OF MULTI-LEVEL SYSTEMS MOVING IN A MEDIUM WITH A SPEED GREATER THAN THAT OF LIGHT, tr. by R. P. Illwitzer. 18 Feb 59 [7]p. 9 refs. TG 230-T62.
Order from OTS $0.50 59-11930

Trans. of Zhurnal Eksperimental'noy i Teoreticheskoy Fiziki (USSR) 1958, v. 35, no. 3, p. 817ff.

Several possibilities are discussed associated with multi-level system radiation at speeds greater than light: level populations, transition probabilities.

Kaschlun, F.
DISPERSION RELATIONS FOR THE SCATTERING OF π-MESONS BY DEUTERONS. [1959] 26p. 6 refs.
Order from LC or SLA mi$2.70, ph$4.80 AEC-tr-3590

Trans. of mono. pub. by the Joint Institute for Nuclear Research, Moscow, 1957.

The dispersion relations for the elastic forward scattering of charged and uncharged π-mesons by deuterons are derived, neglecting electromagnetic interaction. The following differences, as compared with the problem of the scattering of π-mesons by free nucleons, are found: (1) The scattering amplitude is to begin with symmetric in the isotope spin indices of the π-meson and identical dispersion relations for the scattering of positive, negative and neutral π-mesons are obtained; (2) the non-observable region gives a continuous contribution, and no pole contributions appear; (3) the stream matrix elements diverge in almost the whole nonobservable region, so that one is immediately dependent on the method of analytic continuation of N. N. Bogolyubov, et al. (Problems of the theory of dispersion relations (in Russian, see BE 1217), Gostechisdat Pubs., 1958; a shortened German trans. is scheduled to appear in Fortschr. d. Phys., Akademie-Verlag, Berlin); and (4) certain polarization effects concerning the spin of the deuteron appear. Plausible assumptions are made about the form of the stream matrix elements (which can ultimately be checked by means of the dispersion relations) and the detailed calculations are carried so far that they can be used immediately for a comparison with experimental data.

Meshcheryakov, M. G., Bogachev, N. P. and others.
THE ELASTIC SCATTERING OF PROTONS BY PROTONS AT AN ENERGY OF 460 Mev. [1959] 4p. 12 refs.
Order from CCT $5.00 CCT-1245TT

Trans. of [Akademiya Nauk SSSR. Doklady, 1954, v. 99, no. 6, p. 955-958].

A collimated beam of 10^6 protons/sq cm/sec from a synchrocyclotron (Institute for Nuclear Problems of the Acad. Sci. USSR) was used to investigate elastic (p, p) scattering. The proton energy, determined by the emission angle of the Cherenkov radiation, was 460.0±0.9 Mev. The spread in proton momentum did not exceed ±1% and the angular dispersion was less than 0.7°. Elastic (p, p) scattering was distinguished from the general background of accompanying inelastic processes by detecting both of the collision particles in correlated telescopes composed of 3 scintillation counters each. Simultaneous observations were made of pulse coincidences between the 2 telescopes as well as of the triple coincidences in each telescope as produced by a single particle. Particles could be identified by observing their range in absorbers located between the telescopes or by the intensity of the light flashes which they produced in the scintillation crystals. Excellent agreement between calculated and experimental values of the relativistic deviation from the 90° angle between the directions in which the scattered and recoil protons come indicated that at 460 Mev proton collisions are strictly elastic processes and do not produce mesons. The differential cross section $\sigma(\theta)$ increased slightly as θ was reduced from 90° to 30°. The ratio of the values of $\sigma(\theta)$ at 30° and 90° was 1.14±0.06 for angular distributions measured by a single telescope. Linear extrapolation to the small-angle region gave a total cross section of $22 \cdot 10^{-27}$ sq cm. Results suggest that the phase shifts of the $^1S_0$ and $^3P_0$ waves are about 90°, and that other states which make an asymmetric contribution exist in high-energy (p, p) scattering. (See also 59-16592)

Nomofilov, A.
A POSSIBLE CASE OF DECAY OF A τ-MESON WITH EMISSION OF AN ELECTRON-POSITRON PAIR. [1959] 5p. 7 refs.
Order from LC or SLA mi$1.80, ph$1.80 AEC-tr-3589

Trans. of a mono. pub. by the Joint Institute for Nuclear Research, Moscow, 1957.

Selektor, Ya. M., Nikitin, S. Ya. and others.
THE SCATTERING OF PROTONS WITH ENERGY OF 460-660 Mev BY PROTONS. [1959] 3p. 8 refs.
Order from CCT $5.00 CCT-1247TT

Trans. of [Akademiya Nauk SSSR. Doklady] (USSR) 1954, v. 99, no. 6, p. 967-969.

The external proton beam of the phaseotron at the Institute for Nuclear Problems of the Academy of Sciences of the USSR was used to determine the angular dependence of the differential cross-section for proton-proton scattering. Results indicate that the scattering at 460 Mev is essentially isotropic. A substantial anisotropy was found at 560 Mev. At 660 Mev the effect was quite pronounced: the ratio of the number of protons scattered at 30° to that scattered at 90° was 2.6.

Vaysman, I. A.
SOME NEW MAGIC NUMBERS FOR NUCLEONS. [1958] 5p. 3 refs.
Order from LC or SLA mi$1.80, ph$1.80 AEC-tr-3491

Trans. of Zhur[nal] Eksp[erimental'noy] i Teoret-[icheskoy] Fiz[iki] (USSR) 1958, v. 34 [no. 5] p. 1325-1327.

A review of the properties of nuclei with different numbers of neutrons and protons shows that nuclei containing 30 neutrons, 42 and 60 protons or neutrons usually have notable distinguishing properties. The percentage content of isotopes in nuclei with these numbers of neutrons or protons is much higher than in other nuclei. The Fe and Ni isotopes with N = 30 have very high effective cross sections for the congruent thermal neutron scattering, compared with other isotopes of the same elements. It is probable that certain unusual properties are inherent in configurations of 60 and 42 neutrons. Configurations of 50 and 80 neutrons show some of the same properties as in the nuclei with N = 30 nuclei. All the groups show unstable nuclei. The properties of nuclei with the indicated numbers show promise of interesting findings in further research.

Nuclear Engineering and Power

TYPES OF ATOMIC POWER STATIONS EXISTING UNDER CONSTRUCTION AND PLANNED IN THE USSR. [1959] [12]p. (9 figs. omitted) 13 refs.
Order from LC or SLA mi$2.40, ph$3.30 AEC-tr-3574

Trans. compiled from Soviet open sources, 1956-1957.

The report gives a description of various types of industrial and experimental atomic power stations and reports on the viewpoints expressed by Soviet scientists as to the suitability and efficiency of various reactors. Graphic material is included.

Kurchatov, I. V.
ON SOME WORK OF THE ATOMIC ENERGY INSTITUTE OF THE ACADEMY OF SCIENCES OF THE USSR ON CONTROLLED THERMONUCLEAR REACTIONS, tr. by B. W. Kuvshinoff. 15 Jan 59 [16]p. TG 230-T47.
Order from OTS $0.50 59-11932

Trans. of Atomnaya Energiya (USSR) 1958, v. 5, no. 2, p. 105ff.

Work is continuing in the Soviet Union on Ogra type thermonuclear reactors. Ogra is an adiabatic trap consisting of a plasma-filled straight cylinder having a strong longitudinal magnetic field which is sharply enhanced at each end. The fields at the ends of the cylinder act as mirrors, which reflect charged particles back and forth in the cylinder. Ogra physical and operational parameters are detailed. Recent studies connected with production of plasma in the Ogra machine are described. Problems remaining to be solved are outlined.

Perel'man, R. G.
NUCLEAR ENGINES, tr. by S. E. [1959] 63p. [12 figs. omitted) 23 refs. H-2398.
Order from OTS $1.75 59-11918

Trans. of mono., Yadernyye Dvigateli, Moscow, 1958.

Contents:
The engine of the future
Across nine seas
Eighty thousand kilometers under water
A locomotive of deserts, long journies and mountain passes
On the highway of the atomic era
Around the world
The atom acquires wings
Nuclear rockets
Conclusion
Literature

Pokrovskiy, G. I.
CAN AN ATOMIC MOTOR VEHICLE BE CONSTRUCTED? (Mozhet li byt' Postroyen Atomnyy Avtomobil?) tr. by E. H. [1958] 3p. H-1588.
Order from OTS $0.50 59-11218

Trans. from [Sovetskaya Aviatsiya] (USSR) 1958, no. 97(2961).

The problems in building an atomic powered motor vehicle and the advantages of the vehicle are outlined. An atomic vehicle could be used in areas where conventional fuels are not available, and it could serve as an electric power station or a direct mechanical drive for machine tools and other machines. The primary problem in building an atomic powered automobile is

the weight of the vehicle. Excessive weight would result from the protective screen required to shield personnel from radioactive rays. Construction of new highways and bridges would necessarily be modified to make them wider and capable of supporting heavy

Zimin, M. A.
COMPARAISON DES RENDEMENTS THERMIQUES DES ÉLÉMENTS COMBUSTIBLES DE DIFFÉRENTES FORMES [Sravnitel'naya Otsenka Teplovydelyayushchikh Elementov Razlichnoy Formy] [Comparison of the Thermal Yields of Fuel Elements of Different Forms] tr. by B. Vinogradoff. 1 Dec 58 [16]p. Trans. no. R 562 (text in French).
Order from LC or SLA mi$2.40, ph$3.30
CEA-tr-R562

Trans. in French of Atomn[aya] Energ[iya] (USSR) 1958, Suppl. 1, p. 149-163.

The most effective shape of fuel elements for a fast reactor are rods or plates in packets permitting an average power output of 1000 - 1500 KW/l ($w \leq 9$ m/sec), if they are cooled by sodium. The average power delivery for tubular elements with unilateral cooling attains 900 - 1200 KW/l, in dependence of porosity. Fuel elements in form of Field's tubes with unilateral cooling can be used for fast reactors with a porosity that is less than 60% and a height of ≤ 0.4 m, because only in this way a power delivery of 700 KW/l can be attained. The use of Field's tubes with bilateral cooling is impossible for fast reactors because the average power delivery attains a maximum of only 500 KW/l, even if porosity is 60% and the height 0.5 m. Fuel elements in form of multilayered tubes with bilateral cooling, it is true, permit a power delivery of 1500 KW/l, but their production is problematic. For slow reactors all forms of fuel elements can be used, and the following order may be set up with respect to their effectiveness: Rods, plates, tube-shaped elements with unilateral cooling elements of the type of Field's tube.

Nuclear Reactions

Groshev, L. V., Demidov, A. M. and others.
STUDY OF GAMMA-RAYS EMITTED BY NUCLEI OF VANADIUM, MANGANESE, COBALT AND ALUMINUM DURING CAPTURE OF THERMAL NEUTRONS (Issledovaniye γ-Luchey, Ispuskayemykh Yadrami Vanadiya, Margantsa, Kobal'ta i Alyuminiya pri Zakhvate Teplovykh Neytronov). [1958] [30]p. (foreign text included).
Order from LC or SLA mi$2.70, ph$4.80 AEC-tr-3514

Trans. of Atomnaya Energiya (USSR) [1957, v. 3, no. 9, p. 187-203].

With a magnetic spectrometer analyzing compton-electrons, there were measured energy and intensity of gamma-rays emitted by nuclei which are formed during the capture of thermal neutrons by vanadium, manganese, cobalt and aluminum. Spectra of gamma-rays were studied in the range from 0.25 to 11.5 Mev in the case of vanadium and from 0.25 to 8 Mev in the case of manganese, cobalt and aluminum. Diagrams were constructed of gamma-transitions in the nuclei of V^{52}, Mn^{56}, Co^{60} and Al^{28}. Gamma-rays accompanying the radioactive decay of Mn^{56} were studied.

Schaeffer, O. A. and Zähringer, J.
PRODUCTION OF HELIUM AND ARGON IN IRON BY HIGH ENERGY PROTONS. [1959] 8p. 9 refs. BNL-3495.
Order from SLA mi$1.80, ph$1.80 59-10424

Trans. of Z[eitschrift für] Naturforschung (West Germany) 1958, v. 13a [no. 4] p. 346-347.

Radioactivity

Münnich, K. O. and Vogel, J. C.
RADIOACTIVE CARBON IN THE ATMOSPHERE PRODUCED BY ATOMIC EXPLOSIONS, tr. by Gretchen Riese. 12 Nov 58, 16p. 12 refs. AEC-tr-3500.
Order from SLA mi$2.40, ph$3.30 59-10423

Trans. of [Die] Naturwissenschaften (Germany) 1958, v. 45 [no. 14] p. 327-329.

Pshezhetskiy, S. Ya. and Dmitriyev, M. T.
THE MECHANISM OF SOME SIMPLE CHEMICAL REACTIONS TAKING PLACE UNDER THE ACTION OF IONIZING RADIATIONS. Sep. 58 [72]p. 215 refs. AERE Lib/Trans 800.
Order from LC or SLA mi$4.50, ph$12.30 59-10247

Trans. of Uspekhi Khimii (USSR) 1957, v. 26, no. 7, p. 725-767.
Another translation is available from OTS $2.00 as 59-11946, Feb 59, 76p.

Data are reviewed on simple radiation-chemical reactions of hydrogen, oxygen, carbon, nitrogen, and very simple compounds of these elements. Laws of the elementary primary processes are compared with the characteristics of the subsequent chemical reactions and the role of the processes of ionization and excitation in radiation reactions is traced.

PHYSICS

*AKADEMIYA NAUK SSSR. IZVESTIYA, SERIYA FIZICHESKAYA, 1958, V. 22, NO. 9, P. 1015-1156 (News of the Academy of Sciences of the USSR, Physics Series). [1959] 1v. SOV-48-22-9-(1-40)/40.
Order from OTS $0.80, $4.50/6 issues PB 141 041T-8

Consists of abstracts in English.

IZVESTIYA VYSSHIKH UCHEBNYKH ZAVEDENY. FIZIKA (USSR) 1958, NO. 4, P. 3-176 (News of Institutes of Higher Learning, Physics). [1959] 1v. SOV-139-58-4-(1-30)/30.
Order from CTS $0.90, $5.25/6 issues PB 141 043T-1

Consists of abstracts in English.

*PRIBORY I TEKHNIKA EKSPERIMENTA (USSR) 1958 [V. 3] NO. 4, P. 3-110 (Instruments and Experimental Techniques). [1958] 1v. SOV-120-58-4-(1-30)/30.
Order from OTS $0.80, $4.75/6 issues PB 141 120T-6

Consists of abstracts in English.

*ZHURNAL EKSPERIMENTAL'NOY I TEORETICHESKOY FIZIKI (USSR) 1958, V. 35, NO. 1, P. 3-312 (Journal of Experimental and Theoretical Physics). [1959] 1v. SOV-56-35-1-(1-59)/59.
Order from OTS $1.40, $7.50/6 issues PB 141 052T-5

Consists of abstracts in English.

*ZHURNAL TEKHNICHESKOY FIZIKI (USSR) 1958, V. 28, NO. 9, P. 1853-2091 (Journal of Technical Physics). [1959] 1v. SOV-57-28-9-(1-33)/33.
Order from OTS $1.00, $5.50/6 issues PB 141 053T-10

Consists of abstracts in English.

Landau, L. D. and Khalatnikov, I. M.
ON THE ANOMALOUS ABSORPTION OF SOUND NEAR THE PHASE TRANSITION POINT OF THE SECOND ORDER, tr. by B. W. Kuvshinoff. 4 Mar 59 [8]p. 5 refs. TG 230-T83.
Order from OTS $0.50 59-11927

Trans. of Akademiya Nauk SSSR. Doklady, 1954, v. 96, no. 3, p. 469ff.

Calculations are presented which show that the relaxation time near the transition point grows quickly in proportion to the approach to the , point, therefore the establishment of equilibrium near the , point occurs extremely slowly. This brings about a noticeable attenuation of sound in the asymmetric phase. No anomalies in the absorption of sound occur in the symmetrical phase. Results of the calculations are applicable to all cases of second-order phase transitions.

Electronics

Livshits, A. R.
ON THE PROBABILITY OF AN n-COINCIDENCE. 15 Oct 58 [14]p. 2 refs. T-102.
Order from LC or SLA mi$2.40, ph$3.30 59-10795

Trans. of *Radiotekhnika i Elektronika (USSR) 1957, v. 2, no. 8, p. 947-950.

The problem of determining the probability of pulse coincidence in n-pulse random sequences is examined. Formulae are derived which enable one to determine both the probability and average duration of pulse coincidence in sequences containing pulses with equal or unequal pulse widths.

Seidl, Radko.
ON THE MECHANISM OF THE EMISSION PROCESS IN CHEMICAL EMISSION (Zum Mechanismus des Emissionsprozesses bei der Chemoemission). [1958] [12]p. 20 refs. Tr57-151.
Order from SLA mi$2.40, ph$3.30 59-10590

Trans. of [Chekhoslovatskiy Fizicheskiy Zhurnal] (Czechoslovakia) 1956, v. 6 [no. 5] p. 487-495.

The emission was studied which results from an impact of very slow electrons on the surface of a solid. The connection between this emission and the emission which occurs as a result of interaction of a reactive gas with the surface of a solid, is discussed. Chemical emission may occur from capturing centers in which electrons are localized in energy states which have a lower work-function. On the basis of all available experimental material it must be admitted that the emission occurs according to mechanisms suggested by the assumptions of (1) an exothermic process on the surface of the solid (Z. Phys. 125: 739, 1949) as well as (2) thermoemission from special centers (Nature 174: 657, 1954).

Smolenskiy, G. A.
NEW FERROELECTRICS AND ANTIFERROELECTRICS, tr. by Marcel I. Weinreich. [1958] 72p. 99 refs. (Includes foreign text)
Order from LC or SLA mi$4.50, ph$12.30 SCL-T-217

Trans. of Uspekhi Fizicheskikh Nauk (USSR) 1957, v. 62, no. 1, p. 41-69.

The properties of new ferroelectrics and antiferroelectrics of the oxygen-octahedral type such as strontium titanate, lead zirconate, tungsten trioxide, etc., were investigated. The properties investigated were (1) temperature phase transitions, (2) dielectric permeability, (3) coefficients of linear expansion, (4) crystal structure, and (5) volume electrostriction. The problem of the emergence of spontaneous polarization in crystals was also discussed. It was shown that it is not possible to determine which ions are ferroelectric, because the exact character of the motion of ions in ferroelectrics is not known. The nature of hydrogen bonds and the role played by partially covalent bonds in these crystals was discussed.

The properties of ferroelectrics and antiferroelectrics with a hydrogen bond such as cesium dihydroarsenate, ammonium periodate, silver periodate, etc., were also investigated. A table was prepared listing the temperature of the phase transitions of the new ferroelectrics and antiferroelectrics having a hydrogen bond.

Molecular Physics and Spectroscopy

OPTIKA I SPEKTROSKOPIYA (USSR) 1958, V. 5, NO. 6, P. 629-715 (Optics and Spectroscopy), [1959] lv. SOV-51-5-6-(1-19)/19.
Order from OTS $0.70, $4/6 issues PB 141 047T-12

Consists of abstracts in English.

Beckey, H. D.
MASS SPECTROMETRIC INVESTIGATION OF THE REACTIONS AND PROPERTIES OF FREE RADICALS AND ATOMS. [1958] 33p. 49 refs.
Order from SLA mi$3.00, ph$6.30 59-10235

Trans. of Angewandte Chemie (West Germany) 1958, v. 70, p. 327-339.

A literature review is presented concerning the mass spectrometric method for determining short-lived intermediate products, such as free radicals and atoms, and their properties, formed from gas reactions.

Chayka, M. P.
LUMINOSITÉ D'UN SPECTROMÈTRE À INTERFEROMÈTRE FABRY-PEROT [Svetosila Spektrometra s Interferometrom Fabri-Pero] [Luminosity of a Spectrometer with a Fabry-Perot Interferometer] tr. by B. Vinogradoff. 10 July 58 [21]p. 6 refs. Trans. no. R 463 (text in French).
Order from LC or SLA mi$2.70, ph$4.80 CEA-tr-R463

Trans. in French of Optika i Spe[ktroskopiya] (USSR) 1957, v. 3, no. 4, p. 372-379.

The radiant energy flux obtainable with a spectrometer using a Fabry-Perot etalon and including a monochromator with a prism or a grating is estimated. It is assumed that the exit diaphragm of the spectrometer is a circular aperture on the optical axis of the spectrometer, and that the wavelength may be altered by variation of the optical thickness of the Fabry-Perot etalon.

Fischer, K. A. and Brandes, G.
EMISSION IN THE INFRA-RED SPECTRAL RANGE (Emission in ultraroten Spektralbereich). [1959] [3]p. Tr57-8.
Order from SLA mi$1.80, ph$1.80 59-10642

Trans. of Die Naturwissenschaften (Germany) 1956, v. 43, p. 223-224.

Isayev, N. G.
ANALYSE SPECTROGRAPHIQUE LOCALE [Local Spectrographic Analysis] tr. by B. de Tresvensky. 15 July 58 [4]p. 1 ref. Trans. no. R 460 (text in French).
Order from LC or SLA mi$1.80, ph$1.80 CEA-tr-R460

Trans. in French of Akad[emiya] Nauk SSSR. Izv[estiya. Seriya Fizicheskaya] 1955, v. 19, no. 2, p. 151-152.

A method of quantitative photometric analysis is described, whereby the action of a linearly dispersed spark on a polished sample 20μ in diameter is recorded by means of a spectrograph.

Kostarev, A. I.
COMMENTS ON THE "SUPERFINE" STRUCTURE OF X-RAY ABSORPTION SPECTRA FOR SOLIDS. [1958] 16p. 10 refs.
Order from LC or SLA mi$2.40, ph$3.30 59-10868

Trans. of Zhurnal Eksperimental'noy i Teoreticheskoy Fiziki (USSR) 1949, v. 19, no. 5, p. 413-420.

The fine structure of the lines of x-ray absorption specta of solids is characterized not only by the location of maxima and minima on the spectrum scale, but also by their shape ("Superfine" structure) and by the relative intensity. It is shown that the latter find an explanation in the theory of the fine structure of x-ray absorption, developed previously by this author [1]. Results of numerical calculations of the "superfine" structure are given for Cu and α-Fe. Certain conclusions are made with respect to the effect of the crystal lattice type on the nature of the fine structure of x-ray absorption.

Kostarev, A. I.
THEORY OF THE TEMPERATURE RELATION OF THE FINE STRUCTURE OF X-RAY ABSORPTION SPECTRA OF SOLIDS. [1958] 28p.
Order from LC or SLA mi$2.70, ph$4.80 59-10973

Trans. of Zhurnal Eksperimental'noy i Teoreticheskoy Fiziki (USSR) 1950, v. 20, no. 9, p. 811-823.

The effect on the elementary process of K and X-ray absorption in solids by thermal vibrations of the atoms of the vicinity is investigated. As a result, a theory is developed for the temperature relation of the fine and the superfine structure of absorption. The temperature boundaries for the vanishing of the fine and the superfine structures are calculated, in particular, for crystalline copper. Theoretical conclusions are in sufficiently good agreement with the experiment.

Le Goff, Pierre.
EXPERIMENTAL METHODS FOR STUDYING MECHANISM OF GAS REACTIONS ON METAL SURFACES. DESCRIPTION OF AN ARRANGEMENT USING A MASS SPECTROMETER (Sur les Methodes Experimentales d'Etude du Mecanisme des Réactions de Gaz a la Surface des Metaux. Description d'un

Montage Utilisant un Spectrometre de Masse). [1958] [21]p. 48 refs. Tr57-97.
Order from SLA mi$2.70, ph$4.80 59-10553

Trans. of J[ournal] de Chim[ie] Phys[ique] (France) 1956, v. 53 [no. 4] p. 369-379.

It is shown that to study the fundamental mechanism of heterogeneous reactions and to eliminate the majority of interfering secondary processes, it is expedient to operate at very low pressure and on a surface as smooth as possible. Among the experimental techniques which satisfy these conditions, the "continuous dynamic method" presents numerous advantages. An arrangement is described based on this principle and utilizing a mass spectrometer as analytical apparatus. The theory of operation of the apparatus is developed and it is shown that the set-up can be employed (1) to determine absolute values for velocities of extremely rapid heterogeneous processes; (2) to identify and in certain cases to determine unstable particles (free radicals) formed transitorily in these processes; and (3) to explain the mechanism of the disappearance of these free radicals.

Mayer, Herbert.
ON AN EXPERIMENTAL METHOD FOR THE MEASUREMENT OF MOLECULAR RADIATION (Über eine Experimentelle Methode zur Messung von Molekularstrahlung) tr. by E. David Cater. June 58 [24]p. 2 refs.
Order from SLA mi$2.70, ph$4.80 AEC-tr-3322

Trans. of Z[eitschrift für] Physik (Germany) 1928, v. 52 [no. 34] p. 235-248.

A torsion method is described for measuring the intensity of molecular beams. A wall of very thin metal foil, having a small opening $d\sigma$, separates two spaces I + II, evacuated far enough that the mean free path of the molecule is large compared to the dimension of the opening. The molecules coming from I, through $d\sigma$, enter volume II. A radiometer vane, fastened to a quartz fiber in front of $d\sigma$, receives impulses of the excess molecules coming from I and is deflected. This deflection is measured with a telescope and scale. Preliminary experiments with the method confirmed the law of flow of tenuous gases through thin orifices, experimentally investigated by Knudsen (Ann. d. Phys. 28: 999, 1909). An experimental demonstration was obtained of the cosine law of molecular radiation, i.e., that the number of gas molecules, n, in unit time striking a surface element $d\sigma$ of a wall is given by

$$n = (N/4\pi)u \cos \phi \, d\omega d\sigma,$$

where N is the number of gas molecules per unit volume, $d\omega$ the element of solid angle containing all those molecules having the given direction of motion, ϕ the angle made by the given direction with the normal to the wall, and u the mean velocity of the gas molecule.

Momigny, J.
INFLUENCE OF THE ENERGY OF THE ELECTRONS ON THE DISSOCIATION OF MOLECULES INTO IONS (Influence de l'Energie des Electrons sur la Dissociation des Molecules en Ions). [1958] [17]p. 6 refs.
Order from SLA mi$2.40, ph$3.30 59-10596

Trans. of Soc[iete] Royale [des] Sciences [de] Liége. [Bulletin] (Belgium) 1956, v. 25, no. 3, p. 183-195.

An investigation was made of the abundance of ions in a mass spectrum as a function of total ionization, using CO, CO_2 COS, CS_2 and propane as test molecules. Results conform to the hypothesis of Rosenstock, Wallenstein, and Eyring (Proc. Nat. Acad. Sci. 38: 667-678, 1952). The relative abundance of an ion in the spectrum appears as a measure of both the frequency of the mechanism(s) which produces it, and of the fraction of those ions which have an excitation energy insufficient to cause their decomposition into smaller fragments. As the probability of excitation decreases, the importance of the number of ions which are deprived of an excess of excitation energy will increase so that these ions, the importance of which increases with decreasing electronic energy, belong to that group which possesses a sufficient excitation energy and which participates in the formation of the totality of other ions.

Momigny, Jacques.
MEASUREMENT OF MOLECULAR EXCITATION POTENTIALS BY MEANS OF AN ION SOURCE (Mesure de Potentiels d'Excitation Moleculaires au Moyan d'un Source d'Ions). [1958] [22]p. 10 refs. Tr57-176.
Order from SLA mi$2.70, ph$4.80 59-10587

Trans. of Soc[iété] Chim[ique de] Belg[ique]. Bull[etin] 1957, v. 66 [no. 1/2] p. 33-54.

The ion source of the 21-103 C.E.C. mass spectrometer (Bull. soc. roy. sci. Liege 25: 183-195, 1956) was used in measurements of molecular excitation potentials for helium, neon, and carbon monoxide. Ion currents were detectable at energy values of the electrons lower than the normal ionization potential. This is explained by assuming bielectronic collisions, one exciting and the other ionizing. Resonance phenomena for neon at electron-energy values not coinciding with known energy levels indicated an autoionization phenomenon produced during two collisions with the bombarding electrons, by the excitation of two electrons from the 2p level to the same higher quantum level, and by subsequent reorganization of the atom thus excited, with emission of an electron. A value of 0.6 ± 0.15 volts is attributed to the energy of coupling of the electron spins for neon. (The journal referenced above is incorrectly given in the document as Bull. Soc. Roy. Sci. Lg., 3, 183, 1956.)

Regemorter, Henri van.
ON THE BROADENING OF HYDROGEN LINES BY THE ELECTRON FIELD (Sur l'Elargissement des Raies de l'Hydrogène par le Champ des Electrons) tr. by A. Pingell. 1958 [6]p. 3 refs. NRL Trans. 700.
Order from SLA mi$1.80, ph$1.80 59-10440

Trans. of Academie des Sciences, Paris. Comptes Rendus, 1958, v. 246, no. 19, p. 2737-2740.

The theory of Kolb (Thesis, Mich. U., 1957) is applied to the practical calculation of the Balmer lines. The approximation of Pannekoek remains valid. The

new distribution function is calculated as a function yielding the absorption coefficient at different points of the line.

Schüler, H. and Krimmel, E.
LIGHT FLASH PHOTOLYSIS WITH THE SINGLE TUBE SYSTEM (Blitzlichtphotolyse mit dem Einrohrsystem). [1958] [3]p. 4 refs. Tr57-166.
Order from SLA mi$1.80, ph$1.80 59-10579

Trans. of Zeitschrift für Naturforschung (West Germany) 1957, v. 12a [no. 6] p. 528-529.

Schüler, H. and Lutz, E.
FURTHER DEVELOPMENT OF THE EXPERIMENTAL ARRANGEMENT FOR EMISSION SPECTROSCOPY OF ORGANIC SUBSTANCES IN THE POSITIVE COLUMN OF A GLOW DISCHARGE. OBSERVATIONS ON CHLOROBENZENE ($C_6H_5C_1$) (Über die Weiterentwicklung der Versuchsanordnung für die Emissionsspektroskopie Organischer Substanzen in der Positiven Saule einer Glimm-Entladung. Beobachtungen am Chlorbenzol ($C_6H_5C_1$)).
[1959] 7p. (4 figs. omitted) 5 refs. Tr57-186.
Order from SLA mi$1.80, ph$1.80 59-10576

Trans. of Zeitschrift für Naturforschung (West Germany) 1957, v. 12a [no. 4] p. 334-337.

Further developments are given of a previously described method (Spectrochimica Acta 4: 85, 1950 and 6: 288, 1954) for the observation of the luminosity of organic substances in the positive column of a glow discharge. In order to secure a reproducibility of the spectra it was necessary to keep constant during the experiment the following factors: Intensity of the current, pressure of carrier gas, pressure of the investigated substances at the site of evaporation, and the temperature of the discharge tube. The appearance and the disappearance of new spectra occurred frequently within very narrow experimental limits. With proper experimental conditions it is therefore possible to obtain isolated spectra, because all other luminosity is strongly suppressed. A band spectrum which corresponds to the first excitation of the aromatic ring was found in the "final stage" for chlorobenzene. Furthermore a new continuous looking spectrum was observed between 3400 to 4400 Å.

Optics

Dubovik, A. S.
ELEMENTS OF THE THEORY OF MIRROR SCANNING. [1958] 10p. 21 refs.
Order from LC or SLA mi$1.80, ph$1.80
AEC-tr-3502

Trans. of Zhur[nal] Nauchnoy i Prikladnoy Fotografii i Kinematografii (USSR) 1956, v. 2, no. 4, p. 293-303.

Elements of the theory of mirror scanning in the general form are propounded: the locus of the image in mirror scanning is found. A graphical method of constructing the locus of the image in the general case of mirror scanning is given. The replacement of the complex form of the locus of the image by easily manufactured forms such as a plane and the surface of a right circular cylinder is discussed and methods are derived for effecting this. The question of the rate of motion of the image in the general case is considered. The possibility of obtaining uniform motion of the image in the general case of mirror scanning is examined.

Krylova, T. N.
MULTILAYER DIELECTRIC COATINGS WITH A HIGH COEFFICIENT OF REFLECTANCE ON GLASS SURFACES, tr. by Carlo A. Bauman. [1958], 12p. 20 refs. T-2867.
Order from LC or SLA mi$2.40, ph$3.30 59-10913

Trans. of Optika i Spektroskopiya (USSR) 1958, v. 4, no. 2, p. 217-224.

Multilayer dielectric films on glass surfaces have found extensive application in optics. Multilayer coatings reflecting up to 95% of the incident light within different spectral regions have been obtained chemically from solutions. These coatings consist of 3 to 11 layers of titanium dioxide and silicon dioxide. Spectral curves of the coefficient of reflectance of multilayer films have been calculated graphically and sufficiently good agreement has been obtained between experimental and calculated data.

Milyutin, V. I., Fetisov, D. V. and others.
MICROSCOPE ÉLECTRONIQUE ÉLECTROSTATIQUE SIMPLIFIÉ (Uproshchenyy Elektrostaticheskiy Elektronnyy Mikroskop) [Simplified Electrostatic Electron Microscope] tr. by I. Melnick. 8 Dec 58 [12]p. Trans. no. R 567 (text in French).
Order from LC or SLA mi$2.40, ph$3.30 CEA-tr-R567

Trans. in French of Zavods[kaya] Laborat[oriya] (USSR) 1958, v. 24, no. 1, p. 92-96.

The model of the simplified electrostatic microscope for 45 kV (МЭСМ-45) is described. The apparatus consists of two separate parts: the microscope proper with feeding device (700x500x1400 mm) and the vacuum apparatus (700x400x1150 mm). The efficiency of the apparatus amounts to 50-60 Å, while 1500 to 8000-fold electron-optical enlargement is attained in 4 steps by the potential modification of an intermediary lens. The field of observation has a diameter of 62 mm. The apparatus makes it possible to deal with 5 samples, one after the other, and to take 10 photographs (including stereophotographs), without hereby disturbing the vacuum. By means of this microscope it is also possible to take diffraction- and emission pictures of heated objects. The same device can also be used as a vacuum atomizer.

Sevchenko, N. A. and Florinskaya, V. A.
INFRARED SPECTRAL TRANSMITTANCE OF POROUS AND QUARTZOID GLASSES, tr. by Carlo A. Bauman. [1958] 9p. 10 refs. T-2866.
Order from LC or SLA mi$1.80, ph$1.80 59-10914

Trans. of Optika i Spektroskopiya (USSR) 1958, v. 4, no. 2, p. 189-195.

The spectral transmittance of ordinary and quartzoid glasses obtained by the lixiviation of sodium borosilicate glasses was studied. It is shown that bands characteristic of silicic acid (10.8μ) and boron compounds (7.2μ) are found together with the bands of silicon dioxide (silica).

Rautyan, G. N. and Speranskaya, N. I.
COLOURS OF MARINE SIGNAL LIGHTS (Tsveta Signal'nykh Ognei v Morskom Flote) tr. by G. Belkov. [1958] [73]p. 31 refs. Technical Trans. 782.
Order from LC or SLA mi$4.50, ph$12.30 59-10187

Trans. of Gos[udarstvennyy] Opticheskiy Institut. Trudy (USSR) 1955, v. 24, no. 144, p. 1-42.

Investigations were conducted to determine the manner and extent to which it is possible to satisfy rationally the requirements established by the international rules regarding color signalling at sea. Parameters were likewise determined for the functioning of color signals under meteorological conditions considerably worse than those stipulated by the international rules. A project is given for standardizing the chromaticity of signals used at sea. The types of colored glass which correspond most closely to the established norms are defined.

Solid State Physics

*KRISTALLOGRAFIYA [MOSCOW] (USSR) 1958, V. 3, NO. 2, P. 135-260 (Crystallography). [1959] 1v. [SOV]-70-3-2-(1-26)/26.
Order from OTS $0.70, $4/6issues PB 141 065T-4

Consists of abstracts in English.

*KRISTALLOGRAFIYA [MOSCOW] (USSR) 1958, V. 3, NO. 3, P. 263-396 (Crystallography). [1959] 1v. [SOV]-70-3-3-(1-36)/36.
Order from OTS $0.70, $4/6issues PB 141 065T-3

Consists of abstracts in English.

*KRISTALLOGRAFIYA [MOSCOW] (USSR) 1958, VOL. 3, NO. 4, P. 399-524 (Crystallography). [1959] 1v. SOV-70-3-4-(1-26)/26.
Order from OTS $0.70, $4/6issues PB 141 065T-1

Consists of abstracts in English.

*KRISTALLOGRAFIYA [MOSCOW] (USSR) 1958, VOL. 3, NO. 5, P. 527-651 (Crystallography). [1959] 1v. SOV-70-3-5-(1-24)/24.
Order from OTS $0.70, $4/6issues PB 141 065T-2

Consists of abstracts in English.

PAPERS GIVEN AT THE ALL-UNION CONFERENCE ON THE PHYSICS OF DIELECTRICS, DNEPROPETROVSK, AUGUST 1956. 5 Mar 59, 12p. (7 figs. omitted) 13 refs. JPRS: L-664-N.
Order from OTS $0.50 59-13236

Trans. of mono. Fizika Dielektrikov, Moscow, 1958, p. 19-20, 50-51, 146-152.

Contents:
The dielectric strength of polyethylene at high frequencies, by S. M. Bragin
The effect of beta-radiation of the electric conductivity of synthetic ceresin, by A. M. Ar'yev and A. P. Ashraf'yan
Measurement of the tangent of the loss angle and the dielectric permeability of polymers at wave lengths from 3 to 10 centimeters as affected by the temperature, by A. M. Labanov

Altshuler, S. A.
TIME OF PARAMAGNETIC LATTICE RELAXATION OF HYDRATED SALTS OF RARE EARTH ELEMENTS. [1958] 19p. (1 fig. omitted).
Order from LC or SLA mi$2.40, ph$3.30 59-10976

Trans. of Zhur[nal] Eksp[erimental'noy i] Teoret[icheskoy] Fiziki (USSR) 1953, v. 24, no. 6, p. 681-690.

The problem with respect to the time of paramagnetic lattice relaxation in salts of rare earth elements is investigated theoretically. The direct processes and the second order processes are computed for Ce+++. It is shown that the time of relaxation at room temperature is of the order of 10^{-10} to 10^{-12} seconds which, obviously, is in agreement with experimental data.

Beletskiy, M. S., Gopienko, V. G. and Saksonov, U. G.
A NEW MODIFICATION OF Ti_3O_5. [1958] 7p. 6 refs.
Order from LC or SLA mi$1.80, ph$1.80 59-10602

Trans. of Zhurn[al] Neorgan[icheskoy] Khim[ii] (USSR) 1957, v. 2, no. 9, p. 2276-2278.

A compound of Ti_3O_5 was synthesized by heating mixtures of equimolar quantities of chemically pure preparations of rutile and Ti_2O_3 in vacuum at 920°C. The resulting sooty-black powder was very homogeneous in phase; the initial components of the mixture (rutile and Ti_2O_3) were not detected in it. The samples investigated contained 63.7% titanium. This percentage corresponds to the theoretical content in Ti_3O_5 (63.6%). The increase in weight of a sample due to oxidation at 1000°C was 6.42%. The weight gain during oxidation of Ti_3O_5 to rutile is 7.15%. The data indicates that the

preparation was made up entirely of Ti_3O_5. The density of the preparation, determined by the pycnometric method, was 4.57. An x-ray powder pattern of the compound was taken in filtered copper radiation, using a high-resolution camera with a drum 143.25 mm in diameter. A filter of aluminum foil, 52μ thick, was inserted in front of the x-ray film to absorb the characteristic rays of titanium. The calculated values of the interplanar spacings and the corresponding intensities of the lines indicate that a new modification of Ti_3O_5 was discovered. The presence on the x-ray pattern of this substance of a large number of interference peaks (86 in all), many of which are weak or very weak, indicates that its crystal lattice has low symmetry.

Belov, N. V.
MORPHOLOGY OF CRYSTALS WITH RESPECT TO THEIR SUBMICROSCOPIC STRUCTURE. Jan 59, [8]p. 6 refs.
Order from LC or SLA mi$1.80, ph$1.80 59-15082

Trans. of Kristallografiya, Moscow (USSR) 1958, v. 3, no. 2, p. 225-227.

A demonstration is presented to show that the number of repetitions of a single point selected on the edge cannot be obtained from the symmetry elements of the group, as was attempted by I. I. Shafranovskii (Kristally mineralov, pp 90-106, U. of Leningrad, 1957). (See BE-SOV 263)

Bösenberg, Wolfram.
CHILL CASTING OF THIN, SINGLE CRYSTAL GERMANIUM PLATES. [1958] 3p. (2 illus. omitted) 12 refs.
Order from SLA mi$1.80, ph$1.80 59-10741

Trans. of [Zeitschrift für] Angewan[d]te Physik (West Germany) 1957, v. 9, no. 7, p. 347-349.

A process is described in which single crystal plates of germanium are produced by pouring molten germanium into a vertical graphite jig and growing a new crystal on a seed by slow cooling. The jig is in a protective gas atmosphere inside a quartz tube. Flowing hydrogen at atmospheric pressure can be used but a balanced hydrogen pressure of 10 Torr. in a vacuum is better because any gas bubbled that are on the seed or jig surfaces will be removed. The system is heated by RF induction to maintain cleanliness. The jig is lowered through the RF field at a speed of 1 to 10 cm/hr. The resistivity is changed only a little along the pulling axis, but the crystal can be homogenized by passing a floating zone over it.

Busch, G. and Labhart, H.
THE MECHANISM OF ELECTRICAL CONDUCTIVITY IN SILICON CARBIDE. [1958] [27]p. 14 refs. A.C.S.I.L. Trans. no. 938.
Order from SLA mi$2.70, ph$4.80 59-10136

Trans. of Helvetica Physica Acta (Switzerland) 1946, v. 19 [no. 6/7] p. 463-492.

The Hall effect in single crystals of SiC was measured over the temperature range 100° to 1100°K. From these measurements and from conductivity measurements made by Busch (Helvetica Physica Acta 19; 167, 1946) the following conclusions have been drawn regarding the conductivity process in silicon carbide. The green SiC crystals are excess conductors, the black crystals are hole conductors. The conduction electrons lie at two different energy levels. Certain conclusions are drawn regarding the position and nature of these levels. At high temperatures the electron gas is thought to be degenerate. The Wilson theory of semiconductors is further developed for the case of the early stages of degeneration. This development is used to explain the temperature dependence of the conductivity at high temperatures especially the position of the conductivity maximum. The freedom coefficient of the electrons in the conduction band can be accurately determined and an estimate can be made regarding the number of impurity centers in the crystal. The relaxation time is of the same order of magnitude as in metals.

Davydov, A. S. and Lubchenko, A. F.
THE EMISSION AND ABSORPTION OF LIGHT IN MOLECULAR CRYSTALS CAUSED BY THE FORMATION OF LOCAL EXCITATIONS (Viprominyuvannya i Vbirannya Svitla v Molekulyarnikh Kristalakh, Zumovlene Utvorennyam Lokalizovanikh Zbudzhen') tr. by G. Belkov. [1958] 15p. 13 refs. Technical Trans. 784
Order from LC or SLA mi$2.40, ph$3.30 59-10329

Trans. of Ukrain[s'kyy] Fiz[ychnyy] Zhur[nal] (USSR) 1956, v. 1, no. 1, p. 5-13.

The theory of absorption and luminescence of light by molecular crystals is developed for the case when local excitations are formed in the crystal. Equation are derived which make possible the determination of relationship of intensities of radiated light and the absorption coefficient of light of various polarizations in the molecular crystals.

Dzherpetov, Kh. A. and Zaytsev, A. A.
STRIATED HIGH-FREQUENCY DISCHARGE. Nov 53, 5p. 4 refs.
Order from LC or SLA mi$1.80, ph$1.80 NSF-tr-119

Trans. of Akademiya Nauk SSSR. Doklady, 1953, v. 89 [no. 5] p. 825-828

High-frequency discharge was striated like the positive column in a direct current discharge. A striated column provides a system of zones of intensified ionization that are interconnected by the space charge field. The high-frequency discharge normally has symmetry at its center, but symmetry is destroyed through positioning of the electrodes. Measurements were made utilizing a frequency of 6×10^{8c} and 10^{8c} in tubes containing neon or argon. Electrodes were placed inside or outside the tube. Stationary striations formed in a symmetrical high-frequency discharge controlled by diffusion processes. All striations were equally sharp, and their number was determined by the length of the tube. Striations were in motion until balance by diffusion of charged particles was restored.

Stationary striations were set in motion with controlled velocity, and moving striations were stopped by retarding them. An empirical formula was derived approximating the dependence of the period on the radius and the pressure in neon or argon. It was concluded that moving and stationary striations were the same. The nature of the striations in the inert and the molecular gases was also the same, and they were caused by the same mechanism. In a nonsymmetrical column, free of fixed boundary conditions at the ends, the striations must be in motion.

Emel'yanenko, O. V. and Nasledov, D. N.
ELECTRICAL PROPERTIES OF GaAs AT LOW TEMPERATURES. 7 Oct 58, 21p. 15 refs. T-133.
Order from LC or SLA mi$2.70, ph$4.80 59-10306

Trans. of Zh[urnal] Tekh[nicheskoy] Fiz[iki] (USSR) 1958, v. 28, no. 6, p. 1177-1186

The specific electrical conductivity (σ), the Hall constant (R), and the change of the resistance in a magnetic field ($\Delta\rho/\rho$) were measured for several samples of GaAs with electron conduction. R and σ were practically constant from 1.5° to 300° K. The quantity $\Delta\rho/\rho$ is positive for 300° and 78° K and negative below 60° K. The behavior of R and σ is explained by the "metallization" of the samples investigated, caused by the low effective mass of the electron and the high impurity concentration. The effective mass of the electron is 0.03 times the mass of the free electron, according to measurements of the thermal emf on one of the samples.

Gross, E. F. and Jakovson, M. A.
SPECTRE D'EMISSION DE L'EXCITON [Emission Spectrum of the Exciton] tr. by Geystor. 4 Oct 58, [7]p. 13 refs. Trans. no. R 290 (text in French).
Order from LC or SLA mi$1.80, ph$1.80
CEA-tr-R290

Trans. in French of *[Zhurnal] Tekh[nicheskoy] Fiziki (USSR) 1956, v. 26, no. 6, p. 1369-1371.

Grum-Grizhimailo, S. V. and Plyusnina, I. I.
ON THE ABSORPTION SPECTRA OF COBALT COMPOUNDS. Jan 59, 14p. 19 refs.
Order from LC or SLA mi$2.40, ph$3.30 59-15081

Trans. of *Kristallografiya, Moscow (USSR) 1958, v. 3, no. 2, p. 175-181.

The absorption characteristics of crystals of different structures, colored with bivalent and trivalent cobalt, are studied.

Kaner, F.
CALCULATION OF THE SURFACE ENERGY AND THE TWINNING ENERGY OF CALCITE. [1959] 11p. (11 figs. omitted) 1 ref.
Order from LC or SLA mi$2.40, ph$3.30 59-10504

Trans. of Zh[urnal] Eksperiment[al'noy] i Teoret[icheskoy] Fiziki (USSR) 1939, v. 9, no. 2, p. 218-222.

A crystal of calcite twinned in the plane (110) is studied. A clarification is made of the arrangement of the atoms in the immediate vicinity of the twinning plane and the energy is calculated which is required for splitting the crystal in the (110) plane up to the twinning (8200 erg/sq cm) and in the cleavage (100) plane (6200 erg/sq cm). Surface energies of 4100 and 3100 erg/sq cm, respectively, follow from the above calculations. The plane (110) up to the twinning is not a plane of cleavage, but becomes one after the twinning.

Kessler, F. R.
EMISSION AND ABSORPTION OF LONG-WAVE INFRARED RADIATION BY GERMANIUM IN A PHOTOCONDUCTIVE STATE. [1958] [19]p. 19 refs.
Order from SLA mi$2.40, ph$3.30 59-10724

Trans. of Z[eitschrift für] Naturforsch[un]g (West Germany) 1958, v. 13a [no. 4] p. 295-302.

High densities of electron-hole pairs were produced by the photoconductive effect in germanium between 20° and 70°C; the absorption spectrum of these carriers was determined in the range of from 3 to 15 μ. Internal valence band transitions of the free holes are prevalent. Due to the inverse process to absorption, germanium emits long-wave ultrared radiation with a maximum at 10 μ. The radiation corresponds to the Kirchhoff Law. From the relative magnitude of the absorption bands and the validity of the Kirchhoff Law for the emission, it is possible to conclude that with the optical excitation under consideration the numerical ratio and the radiative transformation of the holes are in a state of thermal equilibrium with the lattice temperature. A change of the reflecting power surpassing 0.1% could not be observed with the existing changes of density of the free charge carriers caused by photoelectric effect.

Kurov, G. A., Semiletov, S. A., and Pinsker, Z. G.
THE ELECTRICAL PROPERTIES AND REAL STRUCTURE OF SINGLE-CRYSTAL FILMS OF GERMANIUM OBTAINED BY VACUUM EVAPORATION (Elektricheskiye Svoystva i Real'naya Struktura Monokristal'nykh Plenok Germaniya Poluchennykh Ispareniyem v Vakuume). [1958] [19]p. 6 refs. (foreign text included).
Order from LC or SLA mi$2.40, ph$3.30 59-10196

Trans. of *Kristallografia [Moscow] (USSR) 1957, v. 2, no. 1, p. 59-63.

An investigation was made of the electrical properties and the structure of monocrystalline or single-crystal films of germanium obtained by spraying in a vacuum on the surface of monocrystals or single-crystals of germanium. The monocrystalline character of the films, established electronographically, was confirmed microscopically and by electron-microscopic investigations. The electrical properties of the films point to the presence of a large number of defects or flaws, which, apparently, cannot be revealed by the electronographic method. The defects in such films are analogous to the defects which arise during the deformation of a monocrystal or a single-crystal.

Osipov, K. A.
FUSION ET AUTODIFFUSION DANS LES METAUX A L'ETAT SOLIDE [Fusion and Self-diffusion in Metals in the Solid State] tr. by M. Ermakoff and B. de Trezvinsky. 19 Nov 58 [18]p. 23 refs. Trans. no. R552 (text in French).
Order from LC or SLA mi$2.40, ph$3.30 CEA-tr-R552

Trans. in French of Akad[emiya] Nauk SSSR. [Otdeleniye Tekhnicheskikh Nauk] Izv[estiya] 1957, no. 7, p. 35-40.

Semiletov, S. A. and Rozsival, M.
ELECTRON DIFFRACTION STUDIES OF InSb FILMS. [1959] 5p. (1 fig. omitted) 1 ref.
Order from LC or SLA mi$1.80, ph$1.80 59-10875

Trans. of *Kristallografiya, Moscow (USSR) 1957, v. 2, no. 2, p. 287-288.

The structure of InSb films, obtained by means of "dusting" (sputtering) in a vacuum, was investigated by electron diffraction. Samples were prepared either by sublimating the original components or by sublimating the preliminarily prepared alloy, the composition of which corresponded to InSb. Celluloid films and rock salt crystals served as base-condensers. Tabulated results indicate that, in addition to the lines which correspond to the cubic face-centered lattice of InSb, the electron diffraction picture shows some additional lines of a comparatively small intensity. The values of the interplanar distances which correspond to these lines neither match in lattice nor the Sb lattice. The relation of the 220 ring diameter of InSb to the diameter of the first extra ring appears to be equal to $\sqrt{3}$, i.e., it corresponds to the indices $11\bar{2}0$ and $10\bar{1}0$ of the hexagonal lattice. The extra lines existing on electron diffraction pictures of InSb are caused by the hexagonal modification of this compound in the films.

Shatalov, A. A.
PHOTOCHEMICAL CONVERSION OF COLOR CENTERS IN HEATED ALKALI-HALIDE CRYSTALS. [1958] 13p. 15 refs. T-2864.
Order from LC or SLA mi$2.40, ph$3.30 59-10777

Trans. of Optika i Spektroskopiya (USSR) 1957, v. 3, no. 6, p. 610-618.

Results are described which supplement the previously given arguments of A. A. Shatalov (Dolkady Akad. Nauk SSSR 92: 549, 1953) in favor of the interpretation of X-centers as the smallest aggregates of F-centers. The relations between the time and concentrations obtained by experiments and calculated on the basis of assumptions on the conversion of F-centers according to the $2F \rightleftharpoons F_2$ scheme, agree satisfactorily with one another. The character of the temperature dependence of the photochemical conversion of F-centers proves that ionic mobility is needed for its process. Therefore the conversion observed cannot be considered as changes inside individual centers. Obviously a colloidal coagulation of F-centers begins and runs under the influence of light. X-centers obtained thermally in NaCl crystals possess photochemical sensitivity by changing into F-centers under the influence of monochromatic light from the region of their maximum. This conversion appears to be opposite to that which we observed in KCl crystals and hints at different properties of X-centers from the properties of ordinary colloids. The spectral position of the maxima of X-bands in various alkali halide crystals satisfies the known relation, $\lambda_{max} d^2 = \text{const}$. This proves that the X-centers have the same type of structure and that they are formations whose characteristics are dependent upon the properties of the basic crystal lattice.

Shmarts, V. L.
DÉTERMINATION DES TEMPÉRATURES DE RECRISTALLISATION (Determination of Recrystallization Temperatures) tr. by M. Sokolovsky. 15 Jan 59 [7]p. 8 refs. Trans. no. R 587 (text in French).
Order from LC or SLA mi$1.80, ph$1.80 CEA-tr-R587

Trans. in French of *Fiz[ika] Metallov i Metalloveden[iye] (USSR) 1958, v. 5(?) no. 1 (3) p. 182-184.

Sil'vestrova, I. M. and Sil'vestrov, Yu. N.
DEVICE FOR MEASURING THE PYROELECTRIC POLARIZATION OF CRYSTALS. Jan 59, 14p. 4 refs.
Order from LC or SLA mi$2.40, ph$3.30 59-15083

Trans. of *Kristallografiya, Moscow (USSR) 1958, v. 3, no. 1, p. 57-63.

An instrument which permits measurements of the pyroelectric polarization with time is described which (1) has the sensitivity and input resistance of the electrometer, (2) permits measurements of capacitance charges of several micromicrofarads, (3) provides for the observation and recording of the processes for periods of 10 milliseconds to 10 minutes, and (4) has a time constant of about 30 to 40 minutes. The device is based on the conversion of direct to alternating voltage and amplification of the latter in a narrow band amplification. A semiconductor microthermometer is used to record changes of temperature. The device has been used for measuring the pyroelectric constant of tourmaline and ethylene diamine tartrate.

Smirnova, N. L.
THE TYPES OF STRUCTURES FOR THE CLOSE-PACKING OF ATOMS. III. POSSIBLE TYPES OF STRUCTURES FOR THE AB_6 COMPOSITION. Jan 59, 8p. 4 refs.
Order from LC or SLA mi$1.80, ph$1.80 59-15080

Trans. of *Kristallografiya, Moscow (USSR) 1958, v. 3, no. 2, p. 232-235.

Superstructures are studied which are possible on the base of hexagonal, cubic, or mixed close-packing for atomic ratios $B:A \geq 3$. A three-dimensional periodicity results when each atom B has four, three, two, and one neighboring atoms A. One structure type is possible for each type of close-packing. All of them consist of close-packed layers of the same kind

Each subsequent layer is superimposed in such a manner that for the given type of close-packing (hexagonal, cubic, or any mixed one) each atom B has two neighboring atoms A.

Weiss, Armin, Hartl, Kurt, and Hofmann, Ulrich
MONOHYDROGEN URANYL PHOSPHATE $HUO_2PO_4 \cdot 4H_2O$ AND MONOHYDROGEN URANYL ARSENATE $HUO_2AsO_4 \cdot 4H_2O$, tr. by M. H. Rand. Oct 58, 10p. (1 fig. omitted) 8 refs.
NP-tr-192.
Order from SLA mi$1.80, ph$1.80 59-10370

Trans. in manuscript form of Z[eitschrift für] Naturforsch[un]g (West Germany) 1957, v. 12b [no. 11] p. 669-671.

The compounds $H(H_2O)_4[UO_2PO_4]$ and $H(H_2O)_4[UO_2AsO_4]$, which can easily be obtained by synthesis, represent the free acids upon which the minerals of the uranium mica group are based. These hydronium uranium-micas crystallize in square optically uniaxial plates, whose powder diagrams could be indexed as a tetragonal crystal. The lattice constants of

$H(H_2O)_4[UO_2PO_4]$	$H(H_2O)_4[UO_2AsO_4]$
$a = 6.90 \pm 0.02$ Å	$a = 7.10 \pm 0.02$ Å
$c = 17.12 \pm 0.04$ Å	$c = 17.50 \pm 0.04$ Å

are very similar to those of the natural uranium micas. The proof of their structure follows from the exchange of the H^+ ions by Ca^{++} ions; the preparations obtained in this way were identical, from an analytical and X-ray point of view, with the natural uranium micas autunite and urano-spinite. The results of thermal dehydration indicate that one water molecule is bound especially firmly even above 110°C, obviously as the H_3O^+ ion. A space of 2.80 or 2.95 Å is available between the layers to accommodate the H^+ ion and the four water molecules per formula unit. Aqueous suspensions of the hydronium uranium micas react distinctly acid. A solubility investigation showed that dissolved UO_2^{2+} ions react according to the equation:

$$2\left\{HUO_2XO_4\right\} + UO_2^{2+} \rightleftarrows UO_2\left\{UO_2XO_4\right\}_2 + 2H^+$$

Yakovlev, I. A. and Velichkina, T. S.
DEUX PHÉNOMÈNES NOUVEAUX ACCOMPAGNANT LES CHANGEMENTS DE PHASE DU SECOND ORDRE [Dva Novykh Yavleniya pri Fazovykh Prevrashcheniyakh Vtorogo Roda] [Two New Phenomena Accompanying the Phase Changes of the Second Order] tr. by J. Mayer. [1958] [41]p. 28 refs.
Trans. no. [R 462] (text in French).
Order from LC or SLA mi$3.30, ph$7.80 CEA-tr-R462

Trans. in French of [Uspekhi] Fiz[icheskikh] Nauk (USSR) 1957, v. 63, no. 2, p. 411-433.

The molecular dispersion of light in quartz is very weak at 20°C. The intensity of the dispersed light shows a practically linear dependence on temperature from room temperature to +250°C. The dispersed light is partially depolarized according to the anisotropy of the crystals. A peculiarity of the phase transformation of quartz is the abrupt modification of the diffraction index n of this crystal in the vicinity of its γ-point. In the vicinity of the point of phase transformation ($\theta = 2,19^{\circ}K$, $p = 1$ at.) the sound velocity passes through a shallow minimum and the absorption coefficient passes through a sharp maximum. Within a temperature interval of $\sim 0,03^{\circ}K$ the absorption coefficient increases more than hundredfold. The absorption coefficient in He of the first sound is proportional to the square of the frequency in the vicinity of the λ-point.

Yezhkova, Z. I., Zhdanov, G. S., and Umanskiy, M. M.
X-RAY DIFFRACTION STUDIES OF THE THERMAL EXPANSION COEFFICIENTS OF GUANIDINE ALUMINUM SULFATE HEXAHYDRATE $C(NH_2)_3Al(H_2O)_6 \cdot (SO_4)_2$. [1958] 3p. 4 refs.
Order from LC or SLA mi$1.80, ph$1.80 59-10882

Trans. of Kristallografiya [Moscow] (USSR) 1958, v. 3, no. 2, p. 231-232.

The specimen studied had a rectangular cross section of 0.5 X 0.45 mm^2 and was cut from a single crystal so that the cutting planes were parallel to the coordinate planes (00.1) and (10.0) with an error not exceeding 1° to 2°. The method for stabilizing and controlling the temperature and the description of the camera RKVT used in this work are given in Kristallografiya [Moscow] (USSR) 2: 508-13, 1957. The interplanar distance d_{100} was computed from the oscillation x-ray diffraction photographs obtained for Cu K_α-radiation according to the 13.0.0 reflection (angle of reflection $\delta \approx 80^{\circ}$); $d_{00.1}$ was computed from x-ray diffraction pictures obtained with Fe K_α-radiation from the 00.9 reflection (angle of reflection $\delta \approx 77^{\circ}$). The distance between the interference spots on the x-ray diffraction pictures was measured with an accuracy of 0.05 mm. In the computation of the angles of reflection a correction with respect to the dimensions of the specimen was introduced and the absorption of x-rays in the specimen in accordance with the WILSON formula (J. Sci. Instrum. 27:321-325, 1950) was taken into account. A linear relationship between the parameters of the elementary cell and the temperature was observed in the investigated range. The lattice parameters at 25°C were: $a = 11.7159 \pm 0.0007$ kX, and $c = 8.9335 \pm 0.0007$ kX. The coefficients of thermal expansion in reference to 25°C for axis aα was $10.0 \pm 0.4 \cdot 10^{-6}$ $grad^{-1}$, and for axis cα was $93.3 \pm 1.0 \cdot 10^{-6}$ $grad^{-1}$. The data obtained indicate that a definitely expressed anisotropy of thermal expansion exists in the guanidine aluminum sulfate hexahydrate crystal for slight differences in the parameters of the hexagonal cell. The coefficient of thermal expansion along the hexagonal axis is approximately nine times greater than the coefficient of thermal expansion in the perpendicular direction.

Zvyagina, A. P. and Iveronova, V. I.
METHOD FOR DETERMINING THE AMPLITUDES OF THERMAL VIBRATIONS OF DIFFERENT TYPES OF ATOMS IN A SOLID SOLUTION. [1959] 11p. 3 refs.
Order from LC or SLA mi$2.40, ph$3.30 59-10879

Trans. of Kristallografiya, Moscow (USSR) 1957, v. 2, no. 5, p. 613-617.

An X-ray method is proposed for the determination of the thermal factors B_1 and B_2 (and the mean square displacements, respectively) separately for different atoms in the binary solid solution. The method is applicable to ordered and very dilute solid solutions. The method is tested for the alloys Cu_3Au (ordered) and Fe-W (1.9%W). The mean square thermal displacements of copper and gold atoms were equal to 0.18 and 0.12 Å respectively. The mean square displacements of tungsten and iron atoms were equal to 0.05 Å and 0.11 Å respectively.

Theoretical Physics

USPEKHI FIZICHESKIKH NAUK (USSR) 1958, V. 66, NO. 2, P. 157-351 (Progress of Physical Sciences). [1959] [13]p. SOV-53-66-2-(1-9)/9.
Order from OTS $0.50, $3/6 issues PB 141 049T-9

Consists of abstracts in English.

Pavlov, V. P. and Vinogradov, G. V.
NEW METHODS AND RESULTS OF THE INVESTIGATION OF PLASTIC DISPERSED SYSTEMS. [1958], 9p. 4 refs.
Order from LC or SLA mi$1.80, ph$1.80 59-10276

Trans. of Akad[emiya] Nauk SSSR. Doklady, 1957, v. 114, no. 5, p. 997-1000.

Bogolyubov, N. N.
EQUATIONS WITH VARIATIONAL DERIVATIVES IN PROBLEMS OF STATISTICAL PHYSICS AND OF QUANTUM FIELD THEORY (Uravneniya s Variatsionnymi Proizvodnymi v Problemakh Statisticheskoy Fiziki i Kvantovoy Teorii Polya) tr. by David Franklin. [1958] 12p.
Order from OTS $0.50 AEC-tr-3487

Trans. of Moscow U. Vestnik (USSR) 1955, v. 10, no. 4/5, p. 115-124.

The method of equations in variational derivatives, a method closely associated with methods of the type of secondary quantization, is studied. A new operator interpretation of the Schwinger theory of Green's function is given on the basis of this method. A new single-particle approximation based on neglecting the isolated loops in the Feynman diagrams is formulated. Equations are obtained similar in their form to the corresponding equations of ordinary single-particle theory, but substantially differing in commutation relations. Methods of the Bloch-Nordsieck, type were used for their approximate solution. The effectiveness of the method of equations in variational derivatives is demonstrated for problems of the theory of the statistical equilibrium of classical systems. In particular, a special form of the representation of the basic equation is established in which they assume a form, corresponding to the independent movement of particles in an external field. The actual interaction of the particles, as in the method of secondary quantization, is considered to be an operator structure of this external field.

Glazanov, V. N.
BREAKDOWN IN VACUUM. [1959] 12p. 26 refs.
Order from LC or SLA mi$2.40, ph$3.30 NP-tr-215

Trans. of Elektrichestvo (USSR) 1958 [no.] 3, p. 40-44.

An analysis of present theories indicates that in the static vacuum (10^{-7} to 10^{-8} millimeters of mercury or less), for a given form of conditioned electrodes, electrical breakdown is determined by the increase of the emission current according to the Fowler-Nordheim equation. (Proc. Roy. Soc. London [A]176: 262, 1940). The breakdown thus depends on the magnitude of the gradient at the cathode, and the critical value of the gradient is 5×10^7 volts per centimeter. With nonconditioned electrodes the course of the discharge follows the theory of Semenov (Theory and practice of dielectric breakdown, Moscow, 1929) and Arnal (Ann. phys. 10: 830, 1955). The beginning of the discharge is determined by the emission of electrons from the cathode. This emission obeys the Schottky formula with a value of the work function which is less than the theoretical value and a field form coefficient of 3 to 5. In what follows the development of the breakdown is determined by the magnitude of the applied voltage. The magnitude of the mean breakdown gradient is 3×10^6 to 3×10^5 volts per centimeter, depending on the distance between the electrodes.

Prokhorov, A. M.
ON A SUBMILLIMETER WAVELENGTH MOLECULAR AMPLIFIER AND GENERATOR. [1958] 2p.
Order from MDF $2.00 MDF P-133

Trans. of Zh[urnal] Eksp[erimental'noy i] Teor[eticheskoy] Fiz[iki] (USSR) 1958, v. 34, no. 6, p. 1658-1659.

Problems of using the NH_3 molecule to produce a molecular amplifier and generator (MAG) are discussed. The NH_3 molecule has rotational transitions in the region of wavelengths shorter than 1 mm, making it suitable for use in the MAG. Rotational transitions and inversion levels are sorted at the same time, and molecules at a lower inversion level are sorted when the beam of molecules passed through a quadrupole focusser. To adapt a molecular generator as a resonator, 2 plane-parallel mirrors are used. The quality of this system is calculated, considering the distance between the mirrors, mirror reflection, and the loss of plane wave energy from the reflection. The negative absorption coefficient and the maximum power of an emission beam are determined. Other losses occurring because of the divergence angle of the wave, time, and reflection play are calculated. The self-excitation condition is a significant factor.

Thermodynamics

Krupkovskiy, A., Ptak, V. and Blek-Bol'ten, A.
THERMODYNAMIC FUNCTIONS IN BINARY SYSTEMS. [20 Mar 59] 10p. 10 refs.
Order from RIS $20.00 R 745

Trans. of Zhurnal Neorganicheskoy Khimii (USSR) 1958, v. 3, no. 4, p. 939-944.

The values of thermodynamic functions for individual cases in binary systems were determined. The state of a system of substances which was in equilibrium at certain conditions of pressure and temperature had corresponding thermodynamic functions. For solutions, the values were dependent upon concentration. Entropy, enthalpy and free energy were of special interest. To determine the conditions of the phase equilibrium in binary systems, a chemical potential was used which related to 1 mole of the solution or mixture. The empirical formula of the molar heat capacity of the substance expressed the changes with temperature in the individual thermodynamic functions. In a specific example, the zinc-cadmium equilibrium system was examined to determine its thermodynamic functions. It was observed that at 538°K, a characteristic point expressed the equality of the chemical potential of Zn and Cd in the solid state. At 600°K, the chemical potential of liquid Cd in solutions of any concentration was less than the chemical potential of solid Cd. At 700°K and 800°K, the potential of Zn and Cd in solutions was lower than the analogous functions for the solid state. The free energy of the phases was also determined.

Lohmann, F.
LONGITUDINALLY FINNED ALUMINIUM HEAT EXCHANGERS. 10 Feb 59, 25p. 7 refs.
Order from SLA mi$2.70, ph$3.80 59-10851

Trans. of Aluminium (Germany) 1958, v. 34, no. 7, p. 410-416.

Discussions are presented on (1) the thermal conductivity of aluminium as compared to those of the other metals, (2) the five heat-resistances during heat transfer through a separating wall, (3) the logarithmic average temperature differential, (4) the determination of heat-transfer coefficient, (5) equivalent hydraulic diameter, (6) the utilization of thermal conductivity of the exchanger material through finning, in relation to heat transmitting conditions of the media involved in the heat-exchange, and (7) temperature gradients in fins: the efficiency of fins and its computation: comparative example of fins made of different metals.

Rumer, Yu. B.
THERMODYNAMICS OF THE ELECTRON GAS (K Termodinamike Elektronnogo Gaza) tr. by Marcel I. Weinreich. [1959] [8]p. 1 ref. SCL-T-20[1].
Order from LC or SLA mi$1.80, ph$1.80 59-10418

Trans. of Zhurnal Eksperimental'noy i Teoreticheskoy Fiziki (USSR) 1949, v. 19 [no. 8] p. 757-759.

Wave Propagation

Gershman, B. N., Ginzburg, V. L. and Denisov, N. G.
PROPAGATION OF ELECTROMAGNETIC WAVES IN A PLASMA (IONOSPHERE) (Rasprostraneniye Elektromagnitnykh Voln v Plazme (Ionosfere)) tr. by David Franklin. [1958] 83p. 73 refs.
Order from OTS $1.00 AEC-tr-3493

Trans. of Uspekhi Fiz[icheskikh] Nauk (USSR) 1957, v. 61, p. 561-612.

Contents:
The propagation of electromagnetic waves in a homogeneous magnetoactive plasma
Normal waves in a magnetoactive plasma with the thermal motion of the electrons taken into account
Normal waves in a magnetoactive plasma with the motion of the ions taken into account
On one singularity of the field of an electromagnetic wave which is being propagated in a nonhomogeneous isotropic plasma
Behavior of the field with the influence of plasma waves taken into account
Behavior of the field in a magnetoactive nonhomogeneous plasma
Interaction of the ordinary and extraordinary waves of the ionosphere (multiplication effect of reflected radiosignals)
Interaction of waves with absorption taken into account
Limiting polarization of waves emerging from the ionosphere

Vilensky, L. M.
EFFECTS OF NONLINEAR PROPERTIES OF THE IONOSPHERE ON RADIOWAVES. Feb 54, 4p. 5 refs.
Order from LC or SLA mi$1.80, ph$1.80 NSF-tr-200

Trans. of Akademiya Nauk SSSR. Doklady, 1953, v. 92 [no. 3] p. 525-528.

The effect of perturbation of the ionosphere by strong radiowaves on the waves themselves was studied. Equations for the electric field at any given point in the ionosphere were developed. The current generated in the ionosphere by the electric field was calculated by using the kinetic equations of B. L. Davydov (Zhur. eksptl. i teort. fiz: 1069, 1937). The effect of collisions between electrons, and the effect of the earth's magnetic field were disregarded. It was shown that the changes in the amplitude and phase of a radiowave due to the nonlinearity of the medium can be considerable. The case of an amplitude modulated wave impinging on the ionosphere was also studied. It was shown that the nonlinearity caused a change in the amplitude and phase of the wave and also affected the depth of the amplitude modulation. The change in the depth of modulation of the main tone and the magnitude of the harmonics of the amplitude modulation were considerable.

RESEARCH METHODS, TECHNIQUES AND EQUIPMENT

*AKADEMIYA NAUK SSSR. DOKLADY, 1958, V. 121, NO. 4, P. 575-768 (Reports of the Academy of Sciences of the USSR) [1959] 1v. SOV-20-121-4-(1-54)/54.
Order from OTS $1.40, $20/18 issues PB 141 015T-12

Consists of abstracts in English.

*AKADEMIYA NAUK SSSR. DOKLADY, 1958, V. 121 NO. 5, P. 775-951 (Reports of the Academy of Sciences of the USSR) [1959] 1v.
SOV-20-121-5-(1-50)/50.
Order from OTS $1.40, $20/18 issues PB 141 015T-10

Consists of abstracts in English.

*AKADEMIYA NAUK SSSR. DOKLADY, 1958, V. 121, NO. 6, P. 959-1108 (Reports of the Academy of Sciences of the USSR) [1959] 1v. SOV-20-121-6-(1-45)/45.
Order from OTS $1.40, $20/18 issues PB 141 015T-13

Consists of abstracts in English.

*AKADEMIYA NAUK SSSR. DOKLADY, 1958, V. 122, NO. 2, P. 167-319 (Reports of the Academy of Sciences of the USSR) [1959] 1v. SOV-20-122-2-(1-42)/42.
Order from OTS $1.40, $20/18 issues PB 141 015T-11

Consists of abstracts in English.

AKADEMIYA NAUK SSSR. VESTNIK, 1958 [V. 28] NO. 10, P. 3-134 (Herald of the Academy of Sciences of the USSR). [1959] 1v. SOV-30-58-10-(1-53)/53.
Order from OTS $0.50, $6.00/year PB 141 025T-10

Consists of abstracts in English.

AKADEMIYA NAUK URSR, KIEV. DOPOVIDI, 1958, NO. 2, P. 119-233 (Reports of the Academy of Sciences UKR SSR). [1958] 1v.
SOV-21-58-2-(1-28)/28.
Order from OTS $0.60, $3.50/6 issues PB 141 016T-9

Consists of abstracts in English.

IGY: SCOPE AND RESOURCES OF SOVIET EXPLORATIONS [Masshtaby i Sredstva Sovetskikh Issledovanii) tr. by B. W. Kuvshinoff. 5 Mar 59 [6]p. TG 230-T95.
Order from OTS $0.50 59-11933

Trans. of Priroda (USSR) 1958 [v. 47] no. 5, p. 49ff.

SCIENTIFIC INFORMATION REPT. 24 Apr 59, 148 p.
Order from OTS $2.75, $28.00/year PB 131 891T-20

Consists of unevaluated information extracted from publications of USSR, Eastern Europe, and China.

TRANSLATIONS SERVICE ACCESSIONS. 10 Feb 59, [66]p. TG 230-T48.
Order from OTS $1.75 59-11935

Contents:
Translation notes of interest
Translated tables of contents
Academy of Sciences, USSR. Proceedings (Akademiia Nauk SSSR. Doklady)
Civil aviation (Grazhdanskaia aviatsiia)
Academy of Sciences, USSR. Proceedings (Akademiia Nauk SSSR. Doklady)
Academy of Sciences, USSR. Proceedings (Akademiia Nauk SSR. Doklady)

Moshkovskiy, Yu. Sh.
EFFECT OF REDUCTION SENSITIZERS UPON THE FAILURE OF THE RECIPROCITY LAW AT LOW ILLUMINANCES, tr. by Carlo A. Bauman. [1958] 3p. 2 refs. T-2843.
Order from LC or SLA mi$1.80, ph$1.80 59-10246

Trans. of Zhurnal Nauchnoy i Prikladnoy Fotografii i Kinematografii (USSR) 1958, v. 3, no. 1, p. 51-52.

Pomoshchnikova, N. P.
AN INTERNATIONAL CONFERENCE ON THE USE OF RADIOISOTOPES IN SCIENTIFIC RESEARCH. 1 Apr 59, 7p. 23 refs. JPRS: L-718-N.
Order from OTS $0.50 59-13359

Trans. of Akademiya Nauk SSSR. Izvestiya. Seriya Biologicheskaya, 1958, no. 2, p. 248-250.

Topics are noted of selected papers which were presented at the UNESCO sponsored conference which was held in Paris from Sept 9 to 20, 1957. There were 1200 delegates present from 47 countries.

Trillat, Jean-Jacques.
X-RAYS: REFLECTION MICRORADIOGRAPHY. [1958] 2p.
Order from SLA mi$1.80, ph$1.80 59-10636

Trans. of Academie des Sciences, Paris. Comptes Rendus (France) 1941, v. 213, no. 23, p. 833-836.

Communication Theory

Steinbuch, K.
AUTOMATIC RECOGNITION OF CHARACTERS. [1959] 47p. 30 refs.
Order from SLA mi$3.30, ph$7.80 59-10964

Trans. of [NTZ;] Nachrichtentechnische Zeitschrift (West Germany) 1958, v. 11, no. 4, p. 210-219 and no. 5, p. 238-244.

Possibilities and methods are examined for the recognition by automata of printed, typed or longhand characters. These possibilities are compared to the conventional use of punched cards, perforated or magnetic tapes.

Steinbuch, K. and Endres, H.
ELECTRIC TRANSLATING DEVICES. [1958] 32p. 11 refs.
Order from SLA mi$2.70, ph$4.80 59-10865

Trans. of [NTZ;] Nachrichtentechnische Zeitschrift (West Germany) 1957, v. 10, no. 6, p. 277-287.

SOCIAL SCIENCES

FOREIGN TRADE OF THE USSR 1957 (STATISTICAL SURVEY). 17 Feb 59 [298]p. JPRS 526-D.
Order from LC or SLA mi$11.10, ph$45.60 59-14255

Trans. of Suppl. to Vneshnyaya Torgovlya, Moscow, 1958, p. 1-157.

Tables are presented which show (1) USSR trade by country, (2) a summary breakdown of exports and imports, (3) USSR exports by commodity, (4) USSR imports by commodity, and (5) USSR exports and imports by country and by commodity. The information given is based on the accounts of All-Union export and import associations and other organizations engaged in foreign trade operations. These operational accounts are based on transportation and commodity documents obtained from industrial, trade, and other enterprises supplying goods for export, from foreign suppliers of imports, and from transportation organizations. The export list includes exports of domestically produced goods and re-exports of goods of foreign origin. Goods imported into the USSR for use in the national economy and for re-export are shown in the import list. Goods of foreign origin acquired by Soviet foreign-trade organizations abroad and shipped to other countries without delivery in the USSR are also included in exports and imports. The following goods are not included in exports or imports: those supplied as free aid to foreign countries; those furnished by the USSR to the UN technical assistance fund; those sent abroad for display at exhibitions and those entering the USSR for the same purpose; other goods, the export or import of which is noncommercial in nature, including personal parcel post and passenger baggage; and foreign goods in transit through USSR territory.

BOOK REVIEWS

The following book reviews can be ordered by number from OTS for 50 cents. Each review includes, in addition to the material shown, a detailed statement of the coverage of the book and a detailed table of contents. The length of each review is indicated at the end of the entry.

BR-SOV/1355
Shapiro, Aleksandr Yakovlevich
TEKNOLOGIYA REMONTA OBORUDOVANIYA KHIMICHESKIKH ZAVODOV (Maintenance of Chemical Plant Equipment (Leningrad, Goskhimizdat, 1958. 367 p. 8,000 copies printed.

This book is intended as a manual for persons engaged in the chemical, metallurgical, paper, food, and pharmaceutical industries, and may be used as a textbook for students of mechanics in technological vuzes and tekhnikums. 3p.

BR-SOV/1365
L'vov. Universytet
MATERIALY X VSESOYUZNOGO SOVESHCHANIYA PO SPEKTROSKOPII. T. 1: (Molecular Spectroscopy) L'vov Izd-vo L'vovskogo univ-ta, 1957. 499 p. 4,000 copies printed. (Series: Its: Fizychnyy zbirnyk, vyp. 3/8/).

This collection of articles is intended for scientists working in the field of spectroscopy and for engineers and laboratory analysts who use spectroscopic methods in their work. 15p.

BR-SOV/1386
Moscow. Nauchno-issledovatel'skiy institut postoyannogo toka
PEREDACHA ENERGII POSTOYANNYM I PEREMENNYM TOKOM (Power Transmission by Direct and Alternating Current) Moscow, Gosenergoizdat, 1958. 334 p. (Series: Its: Izvestiya, sb. 3) 3.350 copies printed.

This collection of articles, issued by the USSR Ministry of Electric Power Stations, is intended for scientists, engineers and designers of high-voltage overhead transmission lines. 7p.

BR-SOV.1389
Akademiya nauk SSSR. Institut fizicheskoy khimii.
TEORIYA I PRAKTIKA ELEKTROLITICHESKOGO KHROMIROVANIYA (Theory and Practice of Electrolytic Chromium Plating) Moscow, Izd-vo AN SSSR, 1957. 231 p. 5,000 copies printed.

This book is for engineers, industrial workers, members of scientific research institutions and teachers concerned with modern methods of electroplating and the manufacture of corrosion-resistant metallic instruments. 2p.

BR-SOV/1392
Leningrad. Inzhenerno-ekonomicheskiy institut
ORGANIZATSIYA I PLANIROVANIYE RAVNOMERNOY RABOTY MASHINOSTROITEL'NYKH PREDPRIYATIY; MEZHVUZOVSKOYE SOVESHCHANIYE. DOKLADY (Organization and Planning of Uniform Work in Machine-building Enterprises; Conference of Vuzes. Reports) Moscow, Mashgiz, 1958. 366 p. (Series: Its: Trudy, vyp. 22) 4,000 copies printed.

This collection of articles is intended for engineering and technical personnel in machine-building establishments, and for scientific workers and students of institutes and departments of engineering and economics. 4p.

BR-SOV/1396
Mazelev, L. Ya.
BORATNYYE STEKLA; TERMOKHIMICHESKIYE PROTSESSY PRI STEKLOOBRAZOVANII, KRISTALLOOPTIKA, TEKHNOLOGIYA, FIZIKO-KHIMICHESKIYE SVOYSTVA I STRUKUTRA STEKOL SOSTAVA B_2O_3-Li_2O-MeO (Borate Glass; Thermochemical Processes in the Production of Glass, Crystalloptics, Technology, Physical and Chemical Properties and the Structure of Glass of the Composition B_2O_3-Li_2O-MeO) Minsk, Izd-vo AN BSSR, 1958. 171 p. 1,800 copies printed.

This book is intended for specialists working in the field of glass technology. 2p.

BR-SOV/1403
Al'shits, Isaak Yakovlevich, Nikolay Fedorovich Verzhbitskiy, and Eduard Feliksovich Zommer
OPORY SKOL'ZHENIYA (Plain Bearings) Kiyev, Mashgiz, 1958. 195 p. (Series: Biblioteka konstruktora) 10,000 copies printed.

This book is intended for designers in the machine-building field. 3p.

BR-SOV/1409
Ryklis, Semen Girgor'yevich, and Mariya Pavlovna Vysotskaya
LABORATORNOYE RUKOVDSTVO PO SINTEZU PROMEZHUTOCHNYKH PRODUKTOV I KRASITELEY (Laboratory Manual for the Synthesis of Dyes and Intermediate Products) Kiyev Izd-vo Kiyevskogo univ-ta, 1958. 191 p. 5,000 copies printed.

This laboratory manual was approved by the Ministry of Higher Education of the UkrSSr as a textbook for chemical engineering department of vuzes in the UkrSSr. It is intended for students specializing in the technology of organic dyes and intermediates. It may also be useful in textile vuzes. 6p.

BR-SOV/1414
Novikov, Mikhail Pavlovich
MEKHANIZIROVANNYY INSTRUMENT DLYA 'SBORKI MASHIN. (Power Tools for Assembling Machinery) Moscow, Trudrezervizdat, 1957. 231 p. (Series: Biblioteka molodogo rabochego) 18,000 copies printed.

This book is intended for young assemblers. It may also be useful to innovators of the assembly departments of machine-building plants and in some degreee to engineering and technical personnel interested in the problems of mechanization of assembly operations. 2p.

BR-SOV/1418
Arutyunov, Valentin Osipovich
ELEKTRICHESKIYE IZMERITEL'NYYE PRIBORY I IZMERENIYA (Electrical Measuring Instruments and Measurements) Moscow, Gosenergoizdat, 1958. 631 p.

This book is a textbook for students of electrical- and power-engineering vuzes. It may also be useful to engineers engaged in designing and using electrical measuring instruments. 8p.

BR-SOV/1421
Kolton, Abram Yudovich, and Isaak El'yevich Etinberg
OSNOVY TEORII I GIDRODINAMICHESKOGO RASCHETA VODYANYKH TURBIN (Principles of Theory and Hydrodynamic Design of Hydraulic Turbines) Moscow, Mashgiz, 1958. 357 p. 3,000 copies printed.

This book is intended for designers and researchers in the field of hydraulic machinery building and may also be used by students specializing in power-machinery building. 4p.

BR-SOV/1422
Navrotskiy, Georgiy Aleksandrovich
PRESSY-AVTOMATY DLYA KHOLODNOY SHTAMPOVKI (Automatic Presses for Cold Working) Moscow, Mashgiz, 1956. 350 p. 8,000 copies printed.

The book is intended for the engineering staff of forging and stamping plants and may be useful to students in mechanical engineering vtuzes. 3p.

BR-SOV. 1423
Zherebtsovm Ivan Petrovich
ELEKTROTEKHNIKA DLYA RADISTOV (Electrical Engineering for Radio Operators) Moscow, Izd-vo DOSAAF, 1958. 236 p. 125,000 copies printed.

The book is intended for radio amateurs with a preparation in mathematics and physics on the seventh-grade level of Soviet secondary schools. 3p.

BR-SOV/1434
Akademiya nauk SSSR. Institut avtomatiki i telemekhaniki
SPRAVOCHNIK PO ELEMENTAM AVTOMATIKI I TELEMEKHANIKI; ELEKTROMAGNITNYYE RELE (Manual on Components of Automatic Control and Telemechanics; Electromagnetic Relays) Moscow, Gosenergizdat, 1958. 285 p. 15,000 copies printed.

This manual is intended for engineers and technicians engaged in the design, manufacture and operation of electromagnetic relays. 2p.

BR-SOV/1435
Akademiya nauk SSSR. Energeticheskiy institut
TEPLO- I MASSOOBMEN V PROTSSESSAKH ISPARENIYA (Heat- and Mass-Transfer in Evaporation Processes) Moscow AN SSSR, 1958. 254 p. 5,000 copies printed.

This book is intended for scientists and engineers in heat engineering and chemical technology and for students and teachers of higher educational institutions in these fields. 3p.

BR-SOV/1438
SPRAVOCHNIK METALLISTA V PYATI TOMAKH. T. 3, KN. 2: SORTAMENT CHERNYKH I TSVETNYKH METALLOV (The Metals Engineering Handbook in Five Volumes. Vol. 3, bk. 2: Assortment of Ferrous and Nonferrous Metals) Moscow, Mashgiz, 1958. 204 p. 50,000 copies printed.

The book is intended for technicians and engineers working in the field of machinery design and in production. 2p.

BR-SOV/1445
Mamonkin, Igor' Grigor'yevich
IMPUL'SNYYE USILITELI (Pulse Amplifiers) Moscow, Gosenergoizdat, 1958. 205 p. 36,000 copies printed.

This book is intended for engineers, technicians and students of radio engineering departments of vuzes. 3p.

BR-SOV/1447
Vladziyevskiy, Aleksandr Pavlovich, Professor Doctor of Technical Sciences
AVTOMATICHESKIYE LINII V MASHINOSTROYENII, KN. 1 (Automatic Lines in Machine Building, bk. 1) Moscow, Mashgiz, 1958. 429 p. 12,000 copies printed.

This book is intended for machine-tool designers, technicians and scientific workers. 5p.

BR-SOV/1448
Vladziyevskiy, Aleksandr Pavlovich, Professor,

Doctor of Technical Sciences
AVTOMATICHESKIYE LINII V MASHINOSTROYENII, KN. 2 (Automatic Lines in Machine Building, Vol 2) Moscow, Mashgiz, 1958. 339 p. 12,000 copies printed.

This book is intended for machine-tool designers, technicians, and scientific workers in machine building. 3p.

BR-SOV/1449
Gor'kovskiy zavod frezernykh stankov
TIPOVOY PROYEKT MODERNIZATSII KONSOL'NO-FREZERNYKH STANKOV MODELEY ... (Standard Design for Modernization of Models 6B82, 6B82G, 682, 682G, 6B12, 612 Knee-and-column-type Milling Machines) Moscow, Mashgiz, 1957. 287 p. 8,000 copies printed.

This book is intended for engineering and technical personnel concerned with the operation and modernization of metal-cutting machine tools. 4p.

BR-SOV/1452
Shal'nov, Valeriy Alekseyevich
SHLIFOVANIYE I POLIROVANIYE LOPATOK GAZOTURBINNYKH DVIGATELEY (Grinding and Polishing Blades of Gas Turbine Engines) Moscow, Oborongiz, 1958. 349 p. 3,000 copies printed.

This book is for engineering-technical workers of machine-building plants, and for scientific research institutes. 5p.

BR-SOV/1456
Paton, Boris Yevgen'yevich
SOVREMENNAYA S VAROCHNAYA TEKHNIKA (Modern Welding Techniques) Kiyev, Mashgiz, 1957. 99 p. (Series: Biblioteka svarshchika) 6,000 copies printed.

This book is intended for welders and those interested in welding and welding techniques. 2p.

BR-SOV/1459
Vsesoyuznyy nauchno-issledovatel'skiy institut po pererabotke slantsev
KHIMIYA I TEKHNOLOGIYA GORYUCHIKH SLANTSEV I PRODUKTOV IKH PERERABOTKI. (Chemistry and Technology of Oil Shales and Shale Products) Leningrad, Gostoptekhizdat, 1958. 335 p. biblio. (Series: Its: Trudy, vyp. 6) 1,000 copies printed.

This book is intended for engineers and technicians working in the shale producing and processing industry, as well as workers of enterprises using shale products. As a textbook it may also be useful for faculty members and students of colleges and tekhnikums. 3p.

BR-SOV/1465
Buchenkov, Aleksey Nikolayevich
RADIOELEKTRONIKA, YEYE DOSTIZHENIYA I PERSPEKTIVY RAZVITIYA; REKOMENDATEL'NYY OBZOR LITERATURY (Radio Electronics, Its Progress and Prospects of Development; Survey of Recommended Literature) Moscow, Tsentr. politekhn. biblioteka, 1956. 15 p. (Series: Moscow. Tsentral'naya politekhnicheskaya biblioteka. Novosti tekhniki, vyp. 1) 20,000 copies printed.

The booklet is addressed to workers, students of technical and secondary schools and to lecturers, libraries and other pe sons engaged in the propagation of scientific and technical knowledge. 1p.

BR-SOV/1467
Shadskiy, Pavel Ivanovich
SOVETSKAYA AVIATSIYA V BOYAKH ZA RODINU (Soviet Aviation in Battles for the Motherland) Moscow, Izd-vo DOSAAF, 1958. 86p. 17,000 copies printed.

This book is intended for the general reader. 1p.

BR-SOV/1468
Merkulov, Vasiliy Nikitovich, and Aleksey Ivanovich Shornikov
OT RUCHNOGO STANKA K AVTOMATU (From Manually-operated Tools to Automatic Machinery) /Moscow/ Moskovskiy rabochiy, 1957. 75 p. (Series: Opyt novatorov moskovskikh predpriyatiy) 4,000 copies printed.

This booklet on the introduction in the USSR of machines for making knitting needles is for the general reader. 2p.

BR-SOV/1469
Chelyabinsk (City) Politekhnicheskiy institut
NOVYYE ISSLEDOVANIYA V OBLASTI KHOLODNOY OBRABOTKI METALLOV (New Research in the Field of Cold Working of Metals) Moscow, Mashgiz, 1958. 60 p. (Series: Its: Sbornik statey, vyp. 9) 4,500 copies printed.

This collection of articles is intended for engineering personnel. 2p.

BR-SOV/1470
Narets, L. K.
RASCHET STATICHESKI NEOPREDELIMYKH SISTEM NA MALYKH VYCHISLITEL'NYKH MASHINAKH (Calculation of Statistically Indeterminate Systems on Small Calculating Machines) Moscow, Gosstroyizdat, 1958. 60 p. 4,000 copies printed.

The booklet is intended for designers in structural engineering, scientific workers and students at vuzes. 2p.

BR-SOV/1482
Kosmachev, I. G., P. S. Kryzhanovskiy, and P. D. Klimchenkov
ANODNO-MEKHANICHESKOYE ZATACHIIVANIYE TVERDOSPLAVNOGO INSTRUMENTA (Electrolytic Sharpening of Hard-alloy Tools) Moscow, Mashgiz, 1952. 104 p. (Series: Bibliotechka elektrotekhnologa, vyp. 3) 10,000 copies printed.

This booklet is intended for technologists working in the field of application of electrical processes as well as for qualified workers. 2p.

BR-SOV/1484
Gorshkov, Georgiy Petrovich, and Aleksandra Fedorovna Yakusheva
OBSHCHAYA GEOLOGIYA (General Geology) Moscow, Izd-vo Mosk. univ., 1957. 465 p. 18,000 copies printed.

This work is intended as a textbook for students at the university level. 6p.

BR-SOV/1485
Pinus, Georgiy Vladimirovich, Valeriy Alekseyevich Kuznetsov and Ivan Mikhaylovich Volokhov
GIPERBAZITY ALTAYE-SAYANSKOY SKLADCHATOY OBLASTI (Ultrabasic Rocks of the Altay-Sayanskaya Folded Region) Moscow, Izd-vo AN SSSR, 1958. 293 p. 1,000 copies printed.

The textbook is intended for exploration geologists engaged in the search for minerals genetically related to ultrabasic rocks. 3p.

BR-SOV/1488
POLUPROVODNIKOVYYE PRIBORY I IKH PRIMENENIYE; SBORNIK STATEY, VYP. 3 (Semiconductor Devices and Their Application; Collection of Articles, Nr 3) Moscow, Izd-vo "Sovetskoye radio," 1958. 350 p. No. of copies printed not given.

This collection of articles is intended for radio engineers, students of vuzes and qualified radio amateurs. 6p.

BR-SOV/1490
Zisman, Girsh Abramovich, and Oskar Movshevich Todes
KURS OBSHCHEY FIZIKI. T. 1: MEKHANIKA, MOLEKULYARNAYA FIZIKA, KOLEBANIYA I VOLNY (Course of General Physics. Vol: Mechanics, Molecular Physics, Oscillations and Waves) Moscow, Fizmatgiz, 1958. 330 p. 25,000 copies printed.

This is a textbook of elementary physics for students attending vuzes and vtuzes. 4p.

BR-SOV/1491
Akademiya nauk SSSR. Institut mashinovedeniya. Komissiya po tekhnologii mashinostroyeniya.
ISSLEDOVANIYA KOLEBANIY METALLOREZHUSHCHIKH STANKOV PRI REZANII METALLOV. (Investigation of Vibrations in Metal-cutting Machine Tools Occuring in the Cutting of Metals) Moscow, Mashgiz, 1958. 292 p. 4,000 copies printed. 3p.

BR-SOV/1492
Moscow. Neftyanoy institut
VOPROSY GEOLOGII I DOBYCHI NAFTI (Problems in Geology and Oil Production) Moscow, Gostoptekhizdat, 1958. 282 p. (Series: Its: Trudy, vyp. 22) 1,300 copies printed.

This book is intended for technical personnel in the oil and gas industries, as well as for instructors and advanced students in petroleum. 3p.

BR-SOV/1494
Akademiya nauk SSSR. Vostochno-Sibirskiy filial.
SYR'YEVYYE RESURSY LEGKIKH METALLOV VOSTOCHNOY SIBIRI, T. 1, CH. 1 i 2. (East Siberian Light Metal Resources, Vol 1, Pt. 1 and 2) Moscow, Izd-vo AN SSSR, 1958. 152 p. (Series: Its: Trudy vyp. 12) 1,500 copies printed.

This book is intended for geologists, as well as economists and planners of aluminum processing enterprises. 2p.

BR-SOV/1496
Korshak, Vasiliy Vladimirovich, and Svetlana Vasil'yevna Vinogradova
GETEROTSEPNYYE POLIEFIRY (Heterochain Polyesters) Moscow, Izd-vo AN SSSR, 1958. 403 p. 5,000 copies printed.

This book is intended for scientists, students and teachers of vuzes, and engineering technologists engaged in the production of synthetic fibers, color varnishes, and plastics. 7p.

BR-SOV/1500
Vasilevskiy, P. F., B. B. Gulyayev, D. P. Ivanov, V. V. Ioda, I. P. Karev, G. I. Kletskin, A. G. Korotkov, A. S. Murakhin, Yu. A. Nekhendzi, P. G. Petrov, and M. A. Smelov
LITEYNAYA TEKHNIKA; 2-YA MEZHDUNARODNAYA VYSTAVKA LITEYNOY TEKHNIKI I LITEYNYYE TSEKHI FRG I GDR (Foundry Technology; Second International Exhibition of Foundry Technology and the Foundries of the FRG and GDR) Moscow, Mashgiz, 1958. 212 p. 3,500 copies printed.

The purpose of this book is to acquaint readers with new developments in foundry technology as presented at the 23rd International Congress of Foundrymen held in Duesseldorf, Germany in 1956. 3p.

BR-SOV/1501
Moscow. Vyssheye tekhnicheskoye uchilishche
VOPROSY POVYSHENIYA DOLGOVECHNOSTI TYAZHELONAGRUZHENNYKH DETALEY MASHIN; SBORNIK STATEY (Problems of Increasing the Durability of Heavily Stressed Machine Parts; Collection of Articles) Moscow, Oborongiz, 1958. 94 p. (Series: Its: Trudy vyp. 78) 3,200 copies printed.

This book is intended for scientists, engineers, manufacturing personnel, and instructors and students of vtuzes. 3p.

BR-SOV/1504
Moscow. Vyssheye tekhnicheskoye uchilishche imeni Baumana
ISSLEDOVANIYE PROTSESSOV I MASHIN GLUBOKOGO KHOLODA; SBORNIK STATEY (Investigation of Deep Freezing Processes and Machinery; Collection of Articles) Moscow, Mashgiz, 1958. 77 p. (Series: Its:/Trudy/vyp. 75) No. of copies printed not given.

This collection of articles is intended for scientific workers and engineers concerned with deep-freezing problems associated with heat-exchange processes and the design of expanders and turbocompressors are published for the first time. See Table of Contents. There are 16 references, 13 of which are Soviet, and 3 English. 3p.

BR-SOV/1509
Kharadze, Yevgeniy Kirillovich
ABASTUMANSKAYA ASTROFIZICHESKAYA OBSERVATORIYA (Abastumani Astrophysical Observatory) /Moscow/ Izd-vo Akad. nauk SSSR, 1958. 37 p. 4,000 copies printed.

This booklet is intended for the general reader. 1p.

BR-SOV/1514
Loginov, Boris Georgiyevich, and Valentin Aleksandrovich Blazhevich
GIDRAVLICHESKIY RAZRYV PLASTA; OPYT NEFTYANIKOV BASHKIRSKOY ASSR (Hydraulic Fracturing; Practices of Petroleum Workers of the Bashkir ASSR) Moscow, Gostoptekhizdat, 1958. 138 p. 2,500 copies printed.

This booklet is intended for petroleum engineers and technicians, personnel of field pressure regulating units, as well as laboratory and scientific research institute workers. 2p.

BR-SOV/1521
Akademiya stroitel'stva i arkhitektury SSSR. Institut osnovaniy i podzemnykh sooruzheniy
INSTRUKTSIYA PO OPREDELENIYU RASHCHETNOY GLUBINY OTTAIVANIYA MERZLYKH GRUNTOV V OSNOVANII SOORUZHENIY I PO OPREDELENIYU RASHCHETNYKH TEPLOFIZICHESKIKH KOEFFITSIYENTOV GRUNTOV (Instructions for Estimating the Depth of Permafrost Thawing When Laying Building Foundations and for Estimating the Thermophysical Coefficients of Soils) Moscow, Gosstroyizdat, 1958. 16 p. 5,000 copies printed.

This booklet is intended for civil engineers and buildiers, particularly those encountering permafrost conditions. 1 p.

BR-SOV/1523
Kraytsberg, Meyer Itskovich
ELEKTROPRIVODY STROITEL'NYKH MASHIN I MEKHANISMOV (Electric Drives of Construction Machines and Mechanisms) Moscow, Gosenergoizdat, 1958. 326 p. 11,000 copies printed.

This book is intended for engineers and technicians of machine-building and electric machine-building plants and constructionand design organizations. 2p.

BR-SOV/1527
Malov, Vladimir Sergeyevich
TELEIZMERENIYE; LEKTSII, VYP. 3, IMPUL'SNYYE I CHASTOTNYYE SISTEMY TELEIZMERENIYA (Telemetering; Lectures, nr. 3, Pulse and Frequency Systems of Telemetering) Moscow, Vses. zaochnyy politekhn. in-t, 1957. 64 p. 1,000 copies printed.

This booklet is intended for students of polytechnic institutes taking courses in telemetering. 2p.

BR-BUL/1534
Raykov, Asen, Professor
FOTOGRAMETRIYA, CH. I (Photogrammetry, pt. 1) Sofia, D'rzh. izd-vo "Nauka i izkustvo," 1956. 344 p. 563 copies printed.

This book is intended to be used as a textbook on photogrammetry and as a reference for photogrammetric engineers. 5p.

BR-SOV/1538
Moscow. Neftyanoy institut.
PERERABOTKA I TRANSPORT NEFTI (Crude Oil Refining and Transportation) Moscow, Gostoptekhizdat, 1958. 184 p. (Series: Its: Trudy, vyp. 23) 1,300 copies printed.

This book is intended for scientists and engineers working in the petroleum and gas industry as well as for advanced students and faculty members of petroleum vuzes. 3p.

BR-SOV/1539
Yurkevich, Iosif Andreyevich
ISSLEDOVANIYA PO METODIKE FATSIAL'NO-GEOKHIMICHESKOGO IZUCHENIYA OSADOCHNYKH POROD; V PRILOZHENII K ZADACHAM

GEOLOGII NEFTI (The Facies Geochemical Method in the Study of Sedir ntary Rocks; Applied to Problems in Oil Geology) Moscow, Izd-vo AN SSSR, 1958. 112 p. 1,500 copies printed.

The book is intended for petroleum geologists and students of oil genesis. 2p.

BR-SOV/1541
Bulakh, Georgiy Ivanovich
TEORIYA PROTSESSA TURBINNOGO BURENIYA (Theory of Turbodrilling) Moscow, Gostoptekhizdat, 1958. 127 p. 3,150 copies printed.

This book is intended for the engineering and technical personnel of the oil and gas industry. 2p.

BR-CZECH/1544
Barton, Karel and Karel Smrcek
METHODY ZKOUSENI KOROSNI ODOLNOSTI MATERIALU (Methods for Testing the Corrosion Resistance of Materials) Prague, SNTL, 1957. 289 p. 2,000 copies printed.

The book is intended for middle and top categories of workers in technical and acceptance inspection in various kinds of plants and for designers and scientific workers in research institutes. It may also be used as a teaching aid in trade schools and colleges. 5p.

BR-SOV/1546
Glazov, Nikolay Vasil'yevich, and Anatoliy Nikolayevich Glazov
NOVYYE PRIBORY I METODY, PRIMENYAYEMYYE V INZHENERNO-GEOLOGICHESKIKH IZYSKANIYAKH (New Methods and Instruments Used in Geological Engineering Explorations) Moscow, Gosgeoltekhizdat, 1957. 69 p. 3,000 copies printed.

This booklet is intended for exploration geologists, geophysicists, and hydrologists, as well as drilling, and highway construction engineers. 2p.

BR-SOV/1547
Kerblay, Tamara Semenovana
RADIOPROGNOZY I IKH SOSTAVLENIYE (Radio Band Forecasts and Their Compilation) Moscow, Svyaz'izdat, 1958. 38 p. (Series: Lektsii po tekhnike svyazi) 11,500 copies printed.

This booklet is intended for radio communications engineers and technicians. 1p.

BR-SOV/1548
Tun, Aleksandr Yakovlevich, and Andrey Osipovich Ivanov
NALADKA ELEKTRICHESKIKH APPARATOV I MASHIN V SKHEMAKH ELEKTROPRIVODA (Adjustment of Electrical Equipment and Machinery of Electric Drive Systems) Moscow, Gosenergoizdat, 1958. 159 p. 21,000 copies printed.

This is a handbook for technicians adjusting and inspecting electric drive equipment. 2p.

BR-SOV/1549
Khovrin, Ivan Nikolayevich
FREZERNAYA OBRABOTKA KRUPNYKH DETALEY (Milling Large Machine Parts) Moscow, Mashgiz, 1958. 23 p. Series: Obmen tekhnicheskim opytom) 7,000 copies printed.

This booklet is intended for milling machine operators and foremen in machine-building plants. 1p.

BR-SOV/1557
Zaslavskiy, Mikhail Leybovich
LIT'YE POD DAVLENIYEM ARMIROVANNYKH I REZ'BOVYKH DETALEY (Pressure Die Casting of Reinforced and Threaded Parts) Moscow, Mashgiz, 1958. 163 p. 6,500 copies printed.

This book is intended for designers and technologists at machine-building plants. It may also be useful to teachers and students at higher technical schools. 3p.

BR-CZECH/1563
Zboril, Josef
MATERIALY JADERNYCH REAKTORU (Nuclear Reactor Materials) Prague, SNTL, 1958, 231 p. 2,200 copies printed.

The book is intended for engineers and technicians working in the field of nuclear technology, machine building, and metallurgy. It may also be used as a manual for students of polytechnical and higher schools. 6p.

BR-GER/1565
Altrichter, Ernst
DAS MAGNETBAND; EIGENSCHAFTEN UND ANWENDUNGEN EINES NACHRICHTENSPEICHERS (Magnetic Tape; Properties and Applications of Signal Storage) Berlin, Verlag Technik, 1958. 228 p. No. of copies printed not given.

The book may be useful to engineers engaged in the development and manufacture of magnetic tapes. 4p.

BR-SOV/1576
TEKTONIKA NEFTENOSYKH OBLASTEY. T. 2, REGIONAL'NAYA TEKTONIKA NEFTENOSNYKH OBLASTEY SSR (Tectonics of Oil-Bearing Regions of the USSR) Moscow, Gostoptekhizdat, 1958. 613 p. 3,000 copies printed.

This work is intended for geologists, particularly those engaged in petroleum exploration. 7p.

BR-SOV/1590
Gitis, E. I.
ELEKTRORADIOAVTOMATIKA; ELEMENTY AVTOMATICHESKIKH I VYCHISLITEL'NYKH USTROYSTV

AVIATSIONNYKH RADIUSTANOVOK (Radio-Electronic Automation; Elements of Automatic and Computing Equipment in Aviation Radio Installations) Moscow, Gosenergoizdat, 1959. 422 p. 30,000 copies printed.

This book was approved by the Ministry of Higher Education, USSR, as a textbook for students of aviation vuzes specializing in radio engineering. It may also be useful to radio engineers interested in the fundamentals of designing automatic and computing equipment. 4p.

BR-SOV/1595
Yakovkin, Avenir Aleksandrovich
ISKUSSTVENNYYE SPUTNIKI ZEMLI (Artificial Earth Satellites) Kiyev, Izd-vo AN Ukrainskoy SSR, 1958. 46 p. 21,000 copies printed.

This booklet is intended for the general reader. 2p.

BR-SOV/1601
Bashkirskiy nauchno-issledovatel'skiy institut po pererabotke nefti.
PERERABOTKA SERNISTYKH NEFTEY (Refining of Sulfurous Petroleum) Leningrad, Gostoptekhizdat, 1959. 232 p. (Series: Its: Trudy, vyp. 1)

This book is intended for engineers and technicians engaged in the refining of sulfurous crudes and in finding uses for obtained products. It may also be used by the personnel of scientific and research organizations of the petroleum industry. 3p.

BR-SOV/1612
Tsytovich, Nikolay Aleksandrovich
OSNOVANIYA I FUNDAMENTY NA MERZLYKH GRUNTAKH (Bases and Foundations in Frozen Ground) Moscow, Izd-vo AN SSSR, 1958. 167 p. 8,000 copies printed.

This book is intended for engineering and technical personnel in the building industry operating under permafrost conditions. It may also be used by students in construction-engineering institutes. 3p.

BR-SOV/1617
Labutin, Vadim Konstantinovich
PROSTEYSHIYE KNOSTRUKTSII NA POLUPROVODNIKOVYKH TRIODAKH (Simple Electronic Equipment Using Transistors) Moscow, Gosenergoizdat, 1958. 47 p. 75,000 copies printed. (Series: Massovaya radiobiblioteka, vyp. 297)

This booklet is intended for radio amateurs. 1p

BR-SOV/1619
Komarov, Viktor Noyevich
DVIZHENIYA ZVEZD (Star Motion) Moscow, Gostekhizdat, 1957. (Series: Populayarnyye lektsii po astronomii, vyp. 6) 20,000 copies printed.

This booklet is intended for the general reader. 1p.

BR-SOV/1623
Molochek, Isidor Aleksandrovich
OSVOYENIYE BOGATSTV VOSTOCHNYKH RAYONOV (Planned Development of National Resources in the Eastern Regions) Moscow, Izd-vo "Sovetskaya Rossiya," 1957. 65 p. (Series: V pomoshch' lektoru, no. 20) 36,300 copies printed.

This booklet is intended for industrial planners and economists, and as an aid to lectures on the industrial development of the USSR. 1p.

BR-SOV/1624
Kulikov, Ivan Georgiyevich
AKKUMULYATORY (Storage Batteries) Moscow, Voyen. izd-vo M-va oborony SSSR, 1958. 118 p. No. of copies not given.

This book is intended for sergeants and officers operating various radio equipment. It also may be useful to those interested in the structure and operation of various types of storage batteries. 3p.

BR-SOV/1629
Sominskiy, Monus Samuilovich
VENTIL'NYYE FOTOELEMENTY (Barrier-layer Photocells) Leningrad, Leningr. dom nauchno-tekhn. propagandy, 1957. 73 p. (Series: Poluprovodniki, vyp. 8) 15,000 copies printed.

This book is intended for engineers and technicians working with semiconductor materials and with equipment containing semiconductor devices. 2p.

BR-SOV/1630
Khristov, Vladimir K.
KOORDINATY GAUSSA-KRYUGERA NA ELLIPSOIDE VRASHCHENIYA. PREVOD S BOLGARSKOGO (Gauss-Krüger Coordinates on a Revolution Ellipsoid. Translated from the Bulgarian) Moscow, Geodezizdat, 1957. 261 p. 2,500 copies printed.

This book is intended for geodesists and cartographers as well as for students in advanced courses in geodetic vuzes. 3p.

BR-SOV/1634
Novozhenov, German Fedorovich
OB"YEMNYYE REZONATORY (Cavity Resonators) Moscow, Voyenizdat M-va obor. SSSR, 1958. 64 p. (Series: Radiolokatsionnaya tekhnika) Number of copies printed not given.

This book is intended for officers working in radio installations. It may also be useful to readers wishing to learn the operation of individual units and components of radar equipment. 2p.

BR-SOV/1644
Ginzburg, A. I, Ye. A. Nechayeva, Yu. B. Lavrenev, and L. K. Pozharitskaya
GEOLOGIYA MESTORONZHDENIY REDKIKH

ELEMENTOV. VYP. 1: REDKOMETAL'NYYE KARBONATITY (Geology of Rare Element Deposits. no. 1: Rare Metal Carbonatites) Moscow, Gosgeoltekhizdat, 1958. 126 p. 5,000 copies printed.

This booklet is intended primarily for geologists. It may, however, because of its non-technical nature be of interest to the general reader. 1p.

BR-SOV/1645
Apel'tsin, F. R. and L. G. Fel'dman
GEOLOGIYA MESTOROZHDENIY REDKIKH ELEMENTOV. VYP. 2: KOLUMBITONOSNYYE GRANITY (Geology of Rare Element Desposits. no. 2: Columbite-Bearing Granites) Moscow, Gosgeoltekhizdat, 1958. 48 p. 5,000 copies printed.

This booklet is intended for geologists, mining engineers and other specialists connected with columbium (niobium) mineral mining. 2p.

BR-SOV/1653
Ayzenshtat, Boris Abramovich, Yelena Nikolayevna Balasheva, and Ol'ga Moiseyevna Zhitomirskaya
KLIMATICHESKOYE OPISANIYE GOLODNOY STEPI. (Climatic Description of the Golodnaya Steppe) Leningrad, Gidrometeoizdat, 1958. 73 p. 1,000 copies printed.

The booklet is intended for planning and agricultural organizations connected with development of the virgin lands of the Golodnaya Steppe. It is also of interest to climatologists. 2p.

BR-SOV/1654
Akademiya Nauk SSSR. Komitet po geodezii i geofizike.
SOOBSHCHENIYE O NAUCHNYKH RABOTAKH PO GEOMAGNETIZMU I AERONOMII; PREDSTAVLYAYETSYA V MEZHDUNARODNUYU ASSOTSIATSIYU GEOMAGNETIZMA I AERONOMII K XI GENERAL'NOY ASSAMBLEYE MEZHDUNARODNOGO GEODEZICHESKOGO I GEOFIZICHESKOGO SOYUZA. (Bibliography of Scientific Works on Geomagnetics and Aeronomy; presented to the International Association of Geomagnetics and Aeronomy of the 11th General Assembly of the International Union of Geodesy and Geophysics) Moscow, Izd-vo AN SSSR, 1957. 30 p. 1,500 copies printed.

This collection of reports on various subdivisions of geophysics is intended primarily for scientists working in the field. 2p.

BR-SOV/1657
USSR. Glavnoye upravleniye geodezii i kartografii.
TABLITSY PRIRASHCHENIY KOORDINAT (Tables of Plane Coordinate Increments and Others) 3d ed., enl. Moscow, Geodezizdat, 1958. 156 p. 15,000 copies printed.

This book is intended for surveyors and computers of survey work. 1p.

BR-SOV/1666
Bedrintsev, K. N., and B. A. Desyatchikov
PROMYSHLENNOST' UZBEKISTANA ZA 40 LET (Uzbek Industry During the Last 40 Years) Tashkent, Izd-vo AN Uzbekskoy SSR, 1957. 88 p. 2,000 copies printed.

This booklet is intended for Soviet students of economics as well as for the general public. 1p.

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